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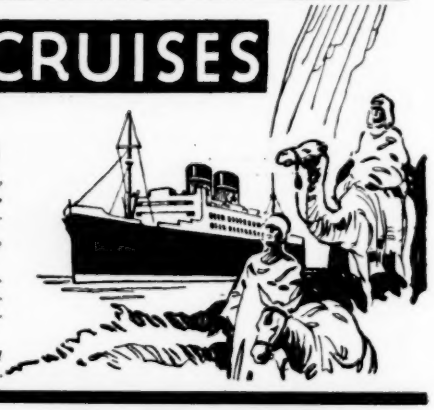

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ADDRESSES AND ORIGINAL ARTICLES

ON VACCINE THERAPY AND IMMUNISATION IN VITRO.*

BY SIR ALMROTH WRIGHT, K.B.E., C.B., M.D., D.Sc. DUB., F.R.S.,

PRINCIPAL OF THE INSTITUTE OF PATHOLOGY AND RESEARCH, ST. MARY'S HOSPITAL; PROFESSOR OF EXPERIMENTAL PATHOLOGY IN THE UNIVERSITY OF LONDON.

THE methods of combating infections in the organism can be divided up into (*a*) those which aim at removing or extirpating the microbes by mechanical means; (*b*) those which aim at killing the microbes by the agency of chemical antiseptics; (*c*) those which make use of the antibacterial powers which already exist in the organism, but do not concern themselves with increasing these; and (*d*) those which aim at developing increased bactericidal powers in the blood or passively supplementing these powers.

It will be useful to preface what I have to say about vaccine therapy by a brief survey of the alternative methods of treatment.

Methods of *surgical extirpation* may be distinguished into incomplete operations which confine themselves to the removal of a conspicuous focus of infection, and those which aim at the complete eradication of an infection combined with an excision of a *locus minoris resistentiæ*.

Operations of the former kind were only a few years ago extensively employed in surgical tubercle. They were resorted to upon the idea that the organism would, when the full weight of the infection had been taken off, be competent to cope with the germs that were bound to be left behind. This optimism was, of course, more often than not disappointed, the operation being frequently followed by a recrudescence of the infection. This, in point of fact, is just what might have been expected. For operations upon infected foci must always carry with them a risk of producing a negative phase of diminished antibacterial power and favouring the spread of the infection.

Similar dangers attach to enucleation operations of the kind which leave open raw surfaces. Here, if the resistance of the organism is reduced, reinfection from outside is likely to follow.

Treatment by Antiseptics.

The history of antiseptic treatment is the history what has followed from the erroneous assumption that chemical agents which kill microbes when brought into application in water will do the same when brought into application in serum-impregnated tissues, suppurative discharges, and blood. The ordinary medical man deems that assumption to be somehow right, and he fails to see any reason why it should not be. And he feels sure that if the assumptions he made were wrong, clinical observation would very quickly bring this out.

That confidence is quite misplaced. Probative evidence of the harmfulness of a treatment is furnished only when the clinical condition of a patient becomes conspicuously worse after the application of a treatment, and this happens again and again. Similarly probative evidence of the efficacy of a treatment is furnished only when the clinical condition of a patient is indubitably better after treatment, and this happens repeatedly. In every other case clinical observation leaves us in incertitude as to whether a method of treatment is doing a modicum of good, or a modicum of harm, or is doing neither good nor harm.

Once these inherent limitations of clinical methods are realised it becomes obvious that we must, if medicine is to make steady advance, find some method of distinguishing treatment which is in an inconspicuous manner useful; from treatment which is in an inconspicuous manner harmful; and from treatment which does neither harm nor good.

The first thing to lay to heart here is that it is hopeless to trust in such matters to our unaided senses, and that it is in the case of antiseptics fallacious to draw inferences from the clinical condition of the patient or the condition of a wound. If we seriously want to arrive at the therapeutics of a bacterial infection we must do two things.

First, we must experiment upon simpler biological complexes—complexes such as the blood or the pus or inflammatory fluids derived from a focus of infection, or, better still, upon separated blood fluids, transudation fluids, and leucocytes.

Secondly, we must, in order to discover the event of a therapeutic intervention, have recourse to laboratory technique and scientific apparatus.

Let me give a concrete illustration of the kind of therapeutic problem which I have here in view.

As an incident in an enterprise of research undertaken in 1911, with the aim of alleviating the formidable mortality from pneumonia in the mines of the Transvaal, I and my fellow-workers had, *inter alia*, to inquire into the utility of the internal administration of antiseptics, a method of treatment which was in vogue in some of the mine hospitals.

We had here to elect between two procedures—statistical inquiry into the results of treatment being one method; and inquiry into the effect exerted by antiseptics upon the pneumococcus suspended in serum being the other.

Let us consider what the former method of inquiry would have involved. It would have involved, first, obtaining control over the treatment in the mine hospitals. It would have involved choosing one particular antiseptic and one hard and fast scheme of dosage for all the cases, and imposing this upon all the medical officers. It would have involved further the carrying out of the experiments upon a very large number of cases, and arranging for a corresponding number of similar cases to be left untreated. It would have involved also the keeping of medical histories of all the cases and the verification of the diagnoses by post-mortem examinations of all who died.

Again, and this is a very important consideration in connexion with statistical inquiries into any treatment which is believed in by some observers and dissented from by others (and that was the case here), there is in all such cases a very strong presumption that the treatment in question is in reality not very effective, and that the figures when they shall have been arrived at will exhibit a difference too small to be convincing.

Finally, if the aforementioned considerations do not clearly bar the method of statistical inquiry, one has to consider the length of time and the formidable number of patients which would be required for settling by statistics even a single item in a programme

* Based on an address to the Medical Society of London on Oct. 27th, 1930.

of treatment—for example, the superiority of one antiseptic over another, or of one scheme of dosage over another.

From all this it is apparent that the method of statistical inquiry is utterly impracticable, and that it would, if this were the only method available to us, be necessary to abandon all hope of determining whether a particular treatment is in some degree helpful; or in some measure harmful; or leaves things just as they are. There remains, however, the alternative of recourse to laboratory experimentation.

ON THE APPRAISEMENT OF THE VALUE OF ANTISEPTICS BY LABORATORY METHODS.

The earliest, or among the earliest, experiments on the question as to whether antiseptics can be turned to account in the treatment of bacterial infections, would appear to have been those of Koch. It was shown by him that though sublimate in a dilution of 1 in 1,000,000 inhibited the growth of anthrax in nutrient gelatin, sublimate in double that concentration does not in any way modify the course of anthrax infection in rabbits. Behring showed that this found its explanation in the fact that a dilution of 1 in 10,000 of sublimate was required to restrain the growth of anthrax in serum. And calculation shows that to achieve such a 1 in 10,000 concentration of sublimate in the blood fluids of a 70-kilo man it would (assuming these fluids to measure 2500 c.cm., and assuming also the full quantum of sublimate administered to come into application) be necessary to administer intravenously 0·25 g. of sublimate—i.e., about grs. 4.

Our experiments were carried out in essentially the same way as those of Behring. Graduated dilutions of antiseptics were made in water, on the one hand, and serum on the other, and then in each case the same quantum of pneumococcus culture was implanted. The details of these experiments are set out in my book entitled The Treatment of Pneumonia by Drugs and Vaccines (Constable, London, 1914). The upshot was that while lysol, creosote, and guaiacol—the three antiseptics experimented with—kill the pneumococcus in very high dilutions in water they would, for killing the pneumococcus in the patient's blood, have to be administered intravenously in frankly poisonous doses—in the case of lysol in a dose of over 75 minims and in the case of both creosote and guaiacol in a dose of 15 minims.

We now come to some further points in connexion with the testing the efficacy of antiseptics by *in vitro* experimentation. In particular, it must be realised that while the method of measuring of the bactericidal power of an antiseptic upon microbes implanted into serum is infinitely superior to the method of measuring the bactericidal power upon microbes suspended in water, it is, nevertheless, a method which fails to take into regard many very important physiological considerations.

My friend and fellow-worker, Prof. A. Fleming,[1] has very properly insisted that antiseptics which are destined for use in the blood should be tested upon microbes implanted into blood; and similarly, that antiseptics designed for use in a wound should be tested upon microbes contained in or implanted into pus.

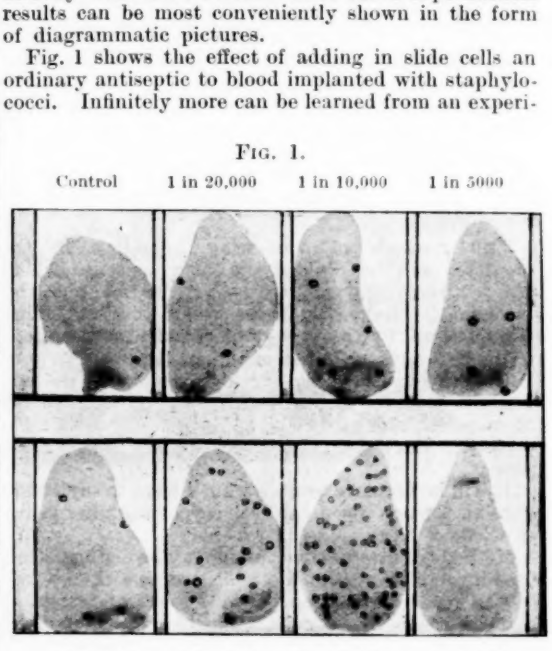
Fleming further pointed out that antiseptics may be usefully tested by implanting staphylococcus into serum without and with antiseptics and incubating measured quanta of such sera in capillary tubes lined with emigrated leucocytes and, for purposes of control, also in ordinary unlined capillary tubes.

[1] Proc. Roy. Soc. B., 1924, xcvi., 171.

The apparatus and technique employed in these testings having been elsewhere described,[2] I may deal directly with their results. And those experimental results can be most conveniently shown in the form of diagrammatic pictures.

Fig. 1 shows the effect of adding in slide cells an ordinary antiseptic to blood implanted with staphylococci. Infinitely more can be learned from an experiment of this kind than was learned from experiments in which microbes are implanted into serum. The experiments which I made by that method in South Africa taught us only that creosote, guaiacol, and lysol and such antiseptics do not kill microbes immersed in serum. From these of Fleming we learn that antiseptics added to blood in small doses render the blood more congenial to microbic growth, and that they, when added in the largest doses that could be used therapeutically, convert the blood into a medium in which serophytic microbes grow unrestrained. (These results are due to the antiseptic entering into destructive chemical combination with the leucocytes.) Finally we learn here, as in experiments such as those we made in Africa, that bactericidal effects are achieved only where frankly poisonous doses are resorted to.

FIG. 1.



Carbolic Acid. Effect on staphylococci in blood. Equal volumes (25 c.mm.) of infected blood and dilution of antiseptic. 25 c.mm. of blood plated on agar gave 56 colonies.

Exactly the same lessons are taught by Fleming's marvellously simple and ingenious experiments with pus. In Fig. 2 it is seen that a non-corrupted pus taken from a wound and kept from drying (by placing it on a moist agar surface under a cover-glass) possess not only sufficient, but (as other experiments show) more bactericidal power than is needed to kill such numbers of microbes as are ordinarily contained in it. And the figure shows that when half per cent. carbolic acid is added to such pus its bactericidal power is forfeited—this being, as in the case of the carbolised blood, due to a poisoning of the leucocytes.

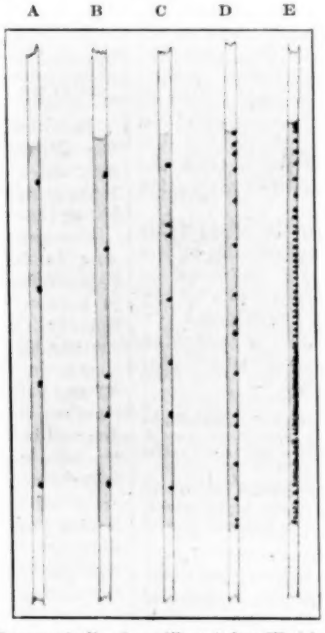
Fig. 3 again enforces the same lesson. Here carbolised and non-carbolised sera are implanted in each case with staphylococcus. In Fig. 3 A where the staphylo-implanted serum has been cultivated in tubes lined with emigrated leucocytes we see that the

[2] Most of it in my "Technique of the Teat and Capillary Tube," second edition, Constable, London, 1921.

number of colonies which develop increases as more and more carbolic acid is added—this result being as in the other experiments attributable to a poisoning of the leucocytes by the antiseptic.

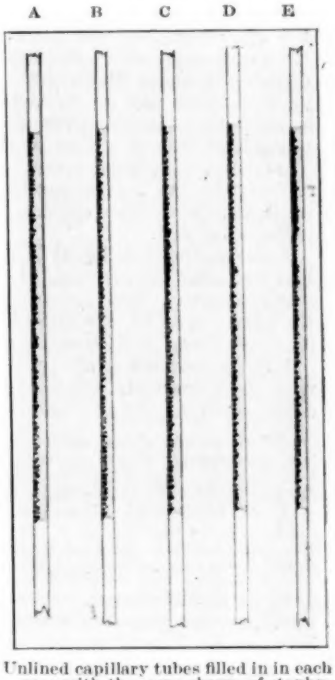
In Fig. 3B where precisely the same sera are cultivated in unlined capillary tubes we see that the number of microbes which grow out into colonies is the same in all the tubes. In other words, carbolic acid in strengths up to 1 in 400 fails to inhibit the growth of staphylococcus in serum.

FIG. 3A.



Leucocyte-lined capillary tubes filled in in each case with serum containing the same charge of staphylococcus and in the case of (B) (C) (D) and (E) an addition of carbolic acid.
(A) Serum with no carbolic.
(B) ,, ,, 1 in 3200 carbolic.
(C) ,, ,, 1 in 1600 ,,
(D) ,, ,, 1 in 800 ,,
(E) ,, ,, 1 in 400 ,,

FIG. 3B.



Unlined capillary tubes filled in in each case with the same charge of staphylococcus and in the case of tubes (B) (C) (D) and (E) an addition of carbolic acid.
(A) Serum with no carbolic.
(B) ,, ,, 1 in 3200 carbolic.
(C) ,, ,, 1 in 1600 ,,
(D) ,, ,, 1 in 800 ,,
(E) ,, ,, 1 in 400 ,,

Chemotherapeutic Agents or Endohæmic Antiseptics.

Having taken these things to heart, we may now pass to the consideration of the antiseptics which Ehrlich styled—I venture to think very unfortunately — *chemotherapeutic agents*. Two things about that designation strike me as unfortunate. The prime objection to the term is that it does not make clear that Ehrlich meant by a chemotherapeutic drug: an agent which would enter into destructive chemical combination with microbes in the organism. The second objection to the term is that every active drug and vaccine has an indefeasible claim to be called a chemotherapeutic agent. In view of this I would propose to call the drugs Ehrlich called chemotherapeutic agents *endoseric*, or *endohæmic, antiseptics*, and to call the ordinary antiseptics, for distinction, "*ectoseric*."

OPTOCHIN.

With this I resume the account of my experiments made in South Africa in 1911. After finding that medicinal quanta of lysol, creosote, and guaiacol were incompetent to kill pneumococci in blood, I proceeded to make trial of optochin—a quinine derivative which had, in the hands of Morgenroth, given very striking results in the treatment of mice infected with a highly virulent pneumococcus. Morgenroth's results pointing, as it seemed to me, to optochin being an endoseric antiseptic—I commenced operations by adding it in graduated doses to serum implanted with pneumococci. These experiments showed that optochin exerted a bactericidal effect upon pneumococci in serum, and that it exerted this effect in serum and in water indifferently in all dilutions up to 1 in 400,000.

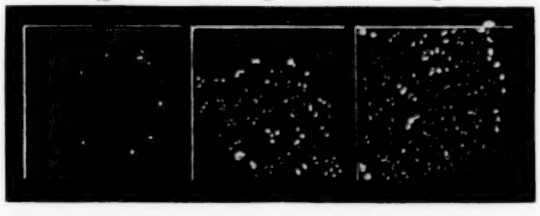
Similar experiments showed that optochin exerts this bactericidal effect specifically upon the pneumococcus. Ordinary ectoseric antiseptics exert their effect upon microbes without distinction of kind.

We further found that the serum of animals and man was bactericidal for the pneumococcus for at least five hours after the ingestion of optochin.

These findings were confirmed by Schiemann[3] in 1915. His experiments showed that the pneumococcus implanted into citrated blood was killed by optochin employed in dilutions as high as 1 in 1,000,000.

There are not sufficient clinical data for deciding definitely upon the value of optochin in the treatment of human pneumonia for, owing to the drug affecting the patient's eyesight, experimentation with it had everywhere to be broken off. The therapeutic effect would, however, appear to have been, taken generally, disappointing.

FIG. 2.



(A) A drop of wholesome uncorrupted pus obtained from a wound was here implanted upon an agar plate and incubated under a cover-glass. Here all the microbes were killed excepting a few which have grown out into colonies in the film of fluid pressed out from the pus by the weight of the cover-glass.
(B) A similar drop of pus which had been heated to 47° C.
(C) A similar drop of pus which had received an addition of 1 in 300 carbolic immediately before it was imposed upon the agar plate.

SALVARSAN.

Let me now deal with another chemotherapeutic agent, to wit, salvarsan, and its application to the treatment of anthrax, streptococcus, and staphylococcus infections.

With regard to the anthrax bacillus, the experiments of Schiemann showed that salvarsan exerts in dilutions such as can be obtained in the blood by the exhibition of a *dosis tolerata* a bactericidal effect upon this microbe. His experiments further showed

[3] Zeits. f. Immun. Orig., 1915, xxiv., 167.

that it takes with such high dilutions a number of hours to effect the destruction of the anthrax bacillus.

The history of the idea that salvarsan might exert a bactericidal action upon the streptococcus in the body is as follows: That salvarsan might possibly exert a bactericidal effect not only upon the spirochætes of syphilis which were Ehrlich's special target, but also upon the associated streptococcal and staphylococcal infections suggested itself to me in treating cases of rupia with one of the earliest samples of 606. What specially impressed me was the almost magical disappearance of the streptococci from the sequence of cultures made from the lesions of patients under treatment. To test the possibility of this being due to a bactericidal action exerted directly upon the streptococcus I proceeded next to administer 606 to a case of malignant endocarditis. That case, like other cases, ended fatally, but the results were so far favourable that for a time the patient's temperature regularly came down after each injection of 606.

Later on the question as to whether the blood fluids become, after the injection of 606, bactericidal to the staphylococcus, was investigated and answered in the affirmative by experiments made by two of my fellow-workers, S. R. Douglas and L. Colebrook.[4]

Later researches made by Colebrook [5] in connexion with the bactericidal effect exerted upon the streptococcus brought out the following facts:—

(1) The variety of streptococcus which is most sensitive to the bactericidal action of salvarsan is the *Streptococcus hæmolyticus*. The others are much less sensitive to the drug administered in medicinal doses.

(2) The blood is, by the intravenous injection of salvarsan, rendered more bactericidal to the *Streptococcus hæmolyticus*. The same result is obtained by adding the drug in similar concentration to the blood in vitro.

These results do not, as was pointed out by Colebrook, mean that salvarsan is not poisonous to leucocytes. It means only that the drug, when employed in medicinal concentrations, is less poisonous to the leucocytes than it is to the streptococcus.

A further important finding which concerns these results must now be noted. Colebrook—like Schiemann, in working with anthrax—found that salvarsan when employed in medicinal doses in serum kills streptococcus only after operating upon them for three hours. Now this means, of course, that salvarsan must, if it is to do any good, continue to circulate in the blood in adequate concentration for that minimum number of hours. Convincing *in vitro* proof that it does so must always be difficult to obtain. What requires in this connexion to be borne in mind is that if a sample of blood drawn off and tested after intravenous injection contains arsenic in effective quantities, that is not in itself conclusive. For the arsenic content in a blood sample which is tested in vitro continues unchanged while the arsenic in the circulating blood may be in steady decline.

It follows from the fact that data with regard to the amount of arsenic in the blood and the rate of elimination in the blood are with difficulty accessible that the utility of salvarsan in the treatment of bacterial infections must in the last instance be determined by clinical experiment.

Favourable results have been reported from the use of the drug in anthrax, and this furnishes ground for hope that success may be obtained also in the treatment of streptococcal infections; and further ground for hope is furnished by the fact that Colebrook, by a course of subcutaneous inoculations of arsenicals, has been able to keep the strepto-bactericidal power of the blood at a high level for several weeks.

[4] THE LANCET, 1916, i., 181.
[5] Med. Res. Council Spec. Rep. Series, 119.

Conclusions Relating to Chemotherapy.

Let me now try to summarise the outcome of this, I am afraid, long-drawn discussion. Two things in particular have come out clearly:—

(1) The first is that a bactericidal and sterilising action in the organism can be looked for only from drugs which can be used in concentrations which exert a bactericidal action in the serum and blood in vitro, and it is futile to expect any advantage from the exhibition of drugs which abolish the bactericidal action of leucocytes.

(2) It is likewise futile to expect a bactericidal and sterilising effect in the organism from the exhibition of such endohæmic antiseptics as are both slow in action and vanish very quickly from the circulation.

In obedience to these principles we must cross off the list of intravitam endohæmic antiseptics, not only all the ordinary familiar antiseptics, but also a large number of drugs which are or have been reputed chemotherapeutic agents.

We must cross off to begin with *sanocrysin* which was, in despite of the fact that it fails to kill the tubercle bacillus when used in a 1 in 500 concentration [6] in serum, bruited abroad as a chemotherapeutic remedy for the treatment of tuberculosis. We must further, despite the fact that *optochin* kills the pneumococcus in the blood in very high dilutions, cross it off our list for the reason that it is gravely poisonous. Further, we must cross off *mercurochrome*, for this drug added to serum and blood in the highest concentrations which would be permissible in the organism fails to exert a bactericidal effect.[7] We must further cross off from the list of chemotherapeutic agents *flavine* and *gentian violet*, for these dyestuffs, though they are both endohæmic antiseptics, are eminently slow in their action, and vanish very quickly from the circulation.

If we question ourselves what remains of the chemotherapy of bacterial diseases proper when all the above items have been crossed out, our answer must be that apparently only salvarsan and its congeners remain. We have seen with regard to these that they can increase the bactericidal power of the blood to the anthrax bacillus and the *Streptococcus hæmolyticus*; and that they may perhaps remain in the circulation in sufficient concentration long enough.

This general conclusion is very important when we ask ourselves exactly how much can be done by methods other than vaccine therapy in the treatment of bacterial infections.

Kataphylaxis.

Before I pass on to consider what can be done by vaccine therapy it will be well perhaps to gauge what can be done by other procedures which aim at killing microbes by what I have ventured to call *kataphylactic* measures, that is measures which determine to the focus of infection the bactericidal powers resident in the blood fluids and leucocytes. Examples of what I have called kataphylactic measures are the opening up of abscesses, the evacuation of infected discharges, the application of Bier's bandages and of hot compresses, all kinds of radio- and helio-therapy, and the drawing out of corrupted serum from an infected surface by the agency of hypertonic salt solution. These methods are in every case of service. But when all is said and done the degree to which they are useful in the particular case depends upon the antibacterial potency of the blood—this being the

[6] Brit. Jour. Exp. Path., 1926, vii., 174.
[7] Unpublished Experiments of Colebrook and Fleming.

reservoir of antibacterial power which every kataphylactic measure draws upon. This may be illustrated by the fact that the opening up of a localised tuberculous focus when the bactericidal power of the blood is below par does very little towards extirpating the infection while such a measure is more effective when the antituberculous power of the blood is well above par.

Principles of Vaccine Therapy.

I pass now to the subject matter proper of this discussion—the employment of vaccines for the purpose of enhancing the antibacterial power of the blood in infected patients.

Let me—for it is axiomatic that every therapeutic measure should repose upon a sound theoretical basis—begin what I have to say about vaccine therapy by harking back to its intellectual foundations, and justifying principles. The principle of vaccine therapy is the same as that of Pasteur's antirabic inoculations. Pasteur gave intellectual countenance to his antirabic inoculations by pointing out that a man who has been bitten by a rabid animal may in the interval between the implantation of the virus and the development of overt symptoms be quite properly classed as uninfected, and that he may consequently, with propriety, be preventively inoculated.

That was the principle to which I gave extended application by pointing out that all localised infections may be conceived of as precursors (generally, of course, abortive precursors) of septicæmic infections. And the way I pictured the situation to myself was that, so long as an infection remains localised, the infected tissues combat the infection unaided, the uninfected tissues remaining in the meanwhile impassive and idle. Picturing things to myself in that way led inevitably to the thought that it would be possible by the aid of vaccines "to turn to account in the interest of the infected tissues the unexploited immunising faculties of the uninfected tissues."

In formulating that principle I had in view under the denomination of "tissues," the "fixed tissues." I meant, so far as I meant anything precisely, the subcutaneous tissues into which the vaccine was inoculated and the various cellular organs with which the vaccine would, after absorption, come into contact. I would now propose to replace the term tissues in the above formula by the term leucocytes. That proposed change of wording is dictated by the consideration that conclusive evidence (some of this I propose to adduce) has been obtained of the elaboration of antibacterial substances by leucocytes, while we have, despite every sort of search, failed to find any indication of the generation of antibodies by the fixed tissues.

With that I pass to another point. When it is claimed for therapeutic procedure that it will enhance the antibacterial power of the blood, that contention should in every case—I need hardly say how very rarely this is even attempted—be confirmed by evidence obtained by laboratory methods. To comply in the case of vaccine therapy with this requirement it was necessary to devise new methods of blood testing. This was necessary because the method of testing the bactericidal power of the serum which I had devised for use in connexion with antityphoid inoculation is inapplicable where we are dealing with serophytic microbes, such as the staphylococcus and streptococcus.

The Opsonic Index.

It was to meet this new requirement my late friend and fellow-worker, W. B. Leishman, devised his method for measuring the phagocytic power of the blood. And the method for measuring the opsonic power of the serum, which was an outcome of Leishman's method, was also devised in the service of vaccine therapy.

Without these methods it would, except only in cases in which inoculation produces dramatic improvement or dramatic exacerbation of symptoms, have been impossible to decide whether a dose of vaccine was doing good or harm, whether it should be increased or diminished, and after what interval inoculation should be repeated.

But the guidance furnished in treatment of individual cases was not, as a matter of fact, the chief intellectual profit gained from our measurements of the opsonic index. (We made for many years 30,000 to 50,000 of such measurements annually at St. Mary's.) We learned from those measurements principles that seem to me to lie at the very foundations of medicine. Let me enumerate them.

(1) To begin with, we learned from these measurements that a succession of negative and positive phases such as I had described [8] in connexion with typhoid vaccination occurred when any vaccine was inoculated in quantity sufficient to produce appreciable constitutional disturbance. With regard to the negative phases, I had already in connexion with prophylactic inoculation pointed out that a negative phase means a temporarily lowered resistance to bacterial attack, and that, therefore, a negative phase should never be induced in a patient who is living in infected surroundings. The same principle holds *a fortiori* of a patient who is already the subject of an infection. Here the induction of a negative phase may lead to an exacerbation and a dissemination of the infection.

(2) The second general principle which was learned from measurements of the opsonic index (and Dr. John Freeman took a conspicuous part in the initiation and development of this research) was that *auto-inoculation* (the term had to be invented) can be artificially evoked by a large variety of procedures, and may also occur automatically. Such auto-inoculations produce negative and positive phases in exactly the same way as inoculations of vaccine.

We further learned in connexion with auto-inoculations that they can be produced in patients by active and passive movements, and by sending an ampler lymph stream through an infected focus (the so-called *stagnation method* of Bier). Further, that they can be produced by helio-therapy, radio-therapy, and the application of heat. And we learned also, quite early in our investigations, that automatic auto-inoculations occur whenever a patient who is the subject of an extensive infection is allowed out of bed. Finally, it was in this connexion brought home to us that in a progressive infection such as phthisis—the same applies, of course, to all acute infections—there sooner or later supervenes a stage when the biography of the patient—even when he is kept completely at rest—resolves itself into a succession of spontaneous auto-inoculations. It is the signal merit of Dr. Marcus Patterson to have applied these principles to practice in the treatment of phthisis, and to have realised that success depends largely upon the regulation of the auto-inoculations by the regulation of exercise, and to have appreciated further that the most rapid and effective remedial treatment for pyrexia produced excessive auto-inoculations is absolute immobility in bed.

(3) A third advantage—and this was, of course, a

[8] Treatise on Antityphoid Inoculation. Constable, London 1904.

question of purely practical as distinguished from theoretical importance—gained from our innumerable measurements of the opsonic index undertaken before and after inoculations undertaken upon patients, was that we learned what quanta of the various vaccines can be administered to slightly infected and non-pyrexic patients without risk of inducing a negative phase.

(4) The fourth advantage gained from our measurement of the opsonic indices of patients was that through these there was formulated a general schema or principle of dosage. The all-important principle which was arrived at is that the dose of vaccine administered to a patient should be inversely as the number of microbes affecting (i.e., delivering antigen) into his circulating blood. In other words, we should in constitutional infections give only minimal doses of vaccine; should give intermediate doses to patients suffering from a strictly limited local infection; and should exploit large doses which produce negative phases only in healthy patients and for prophylaxis.

OPSONINS AND PHAGOCYTOSIS.

Having shown what important principles were learned from our measurements of the opsonic power of the blood-serum, I turn to the question whether we have in the opsonic index a true measurement of the phagocytic power of the blood.

My original idea—based upon investigations carried out with S. R. Douglas [9]—was that the opsonic index furnished a true measure of the phagocytic power of the blood. That conclusion was arrived at by taking from our out-patients (these were non-pyrexic and therefore, probably non-auto-inoculating patients) bloods with high and bloods with low opsonic indices, and comparing the leucocytes of these bloods with those of our own bloods. We employed for that purpose what I have since called the *chiastic procedure*. That procedure consists of digesting with a microbic suspension: (1) the patient's washed corpuscles used in conjunction with his own serum; (2) his corpuscles used in conjunction with a normal serum; (3) washed normal corpuscles used in conjunction with normal serum; and (4) these corpuscles used with the patient's serum. The event of these operations carried out on our out-patients showed that in their case the amount of phagocytosis was determined almost entirely by the serum, and hardly at all by the corpuscles employed in the phagocytic mixture.

Afterwards S. G. Shattock and L. Dudgeon corrected these observations. They employed melanin granules instead of microbes, and carried out the tests upon pyrexic and auto-inoculating, instead as we had done upon patients who were non-pyrexic and, presumably, non-auto-inoculating patients. Shattock and Dudgeon's [10] investigations clearly demonstrated that the phagocytic avidity of the leucocyte is a variable factor, and that the phagocytic avidity of a patient's leucocytes may sometimes be much greater and sometimes much less than that of the normal leucocytes. Their investigations—their results were, as already mentioned, obtained with melanin granules—further established that phagocytic efficiency is a non-specific function of the leucocyte. These fundamentally important observations show that opsonic power is, at any rate, in pyrexic cases, a fallacious measure of the phagocytic power of the blood.

We have in the fact that the phagocytic avidity of leucocytes may suffer change a possible explanation of our having often found very high opsonic power in patients dying of phthisis. Examination might have shown these high indices to have been counterpoised by diminished phagocytic avidity. For in following up the observations of Shattock and Dudgeon we have found that the general rule in severe bacterial toxæmia is for the efficiency of the patient's leucocytes to be low while his opsonic index is high. It is easy to see a possible causal connexion between these two findings. The leucocytes may deplete themselves of antibacterial elements by parting with these to the blood fluids.

I now pass to an issue even more fundamental than that which was raised by Shattock and Dudgeon. We may ask ourselves whether a measurement of the phagocytic power furnishes in any case an adequate measure of the antibacterial power of the blood. That question must be answered in the negative. And our answer must be in the negative—*first*, because the leucocytes can kill bacteria not only intracellularly, but also extracellularly, by excreting bactericidal elements into the surrounding fluids; and *secondly* (and Douglas [11] has examined this question in detail), because phagocytosed microbes may fail to be digested in the leucocytes of one blood while they are in the leucocytes of another blood rapidly digested.

It follows that we cannot, if we wish to arrive at a true measure of the antibacterial power of the blood, content ourselves with measuring phagocytic power. We must measure the actual bactericidal effect exerted.

(To be continued.)

[9] Proc. Roy. Soc., 1903, lxxii., and 1904, lxxiii.
[10] Proc. Roy. Soc. B., 1908, lxxx., 165.

THE TECHNIQUE OF INTRALARYNGEAL INJECTION OF LIPIODOL,

WITH DESCRIPTION OF SPECIAL APPARATUS.

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Lipiodol is a combination of iodine and poppy-seed oil containing 40 per cent. of the former. It is of a pale amber colour and medium consistency when cold, but thins considerably at the body temperature. It is non-irritating and is comparatively rapidly absorbed from the lung tissue. Occasionally it gives rise to iodism, but not so often as might be expected from its large iodine content. It is opaque to the X rays, and this property renders it, when injected into the bronchi, of the greatest value in the diagnosis of certain conditions of the lungs and bronchial tubes which would otherwise remain unsuspected, or, at best, a suspicion impossible of confirmation. To it we owe a fuller knowledge of certain pulmonary diseases, such as bronchiectasis, neoplasm, and pulmonary abscess, and are able to demonstrate the results of artificial compression of the lung in conditions of cavity formation.

There are two methods of introducing lipiodol into the trachea and bronchi, the most generally favoured of which is direct injection into the trachea through the crico-thyroid membrane by means of a needle and syringe. The other method is intralaryngeal injection after local anæsthesia of the pharynx and larynx has been produced, and is the subject of this paper. I do not propose to enter into a discussion of the relative values of these methods; each has its special utility under suitable conditions.

[11] Proc. Roy. Soc. B., 1916, lxxxix.

There are, however, certain advantages associated with the intralaryngeal route. It is simple and well tolerated by nervous patients. Indeed, those who have been the subject of both procedures have expressed themselves strongly in its favour. The discomfort is very transient, and the procedure can be repeated almost indefinitely; one patient received six injections consecutively. It can be quickly performed, and the percentage of failures is very small. It is also free from the suspicion of "operation," is devoid of danger, and becomes a diagnostic routine.

It is probable that the intralaryngeal route has not found the favour it deserves owing to the absence of a satisfactory technique of general application, and the difficulty that has been experienced in producing effective anæsthesia of the larynx. On investigating this method it soon became evident that, if anæsthetisation of the larynx could be satisfactorily accomplished, all the rest would follow, the actual manipulation requiring little more than sufficient skill to use a laryngeal mirror in the left hand whilst the injection is made by a syringe held in the right. Attempts have been made to allow the oil to trickle into the larynx without the use of the mirror, but the result is uncertain, and usually the major part of the lipiodol is found in the stomach, instead of in the bronchi.

A Series of Cases.

The following list includes a series of patients upon whom the intralaryngeal route has been practiced

MEN.

In this list of cases bronchiectasis was demonstrated, except where otherwise stated.

No.	Chief symptoms.	Daily sputum.	No. of Injects.	Remarks.
1	Cough and hæmoptysis.	2 oz.	2	Successful.
2	Cough.	3 ,,	2	,,
3	Silent.	0 ,,	1	,,
4	Cough.	3 ,,	1	,, Negative.
5	,,	½ ,,	1	Successful.
6	Cough and hæmoptysis.	20 ,,	1	Successful. Neoplasm.
7	Cough.	1 drm.	1	Successful.
8	,,	½ oz.	1	Successful. Failed through neck.
9	Silent.	0	1	Successful. Blocked bronchus.
10	Cough.	1 oz.	1	Successful. Chronic bronchitis.
11	,,	2 drm.	2	Successful.
12	,,	1 ,,	1	,,
13	Silent.	0	1	,, Negative.
14	Cough.	2 oz.	1	Successful.
15	,,	3 ,,	1	Not entirely successful.*

* Anæsthesia not complete.

WOMEN.

1	Hæmoptysis.	0	1	Successful.
2	Cough.	Very small.	1	,,
3	,,	2 drm.	1	,,
4	,,	3 ,,	1	,,
5	,,	½ oz.	6	Successful. Simple bronchial stenosis.
6	,,	3 drm.	2	Nervous: failed first time. Second time successful.
7	,,	1 oz.	1	Successful.
8	,,	6 ,,	1	,,
9	,,	1 ,,	1	Failed. Very nervous. Swallowed persistently.
10	,,	½ ,,	1	Successful.
11	,,	1 ,,	2	,,
12	,,	1 ,,	2	,,
13	,,	2 ,,	1	,,
14	Silent.	0	1	,,
15	Cough.	5 oz.	1	,,
16	(See below*).			Failure.
17	Cough.	½ oz.	1	Successful.

* Patient highly nervous and would not open her mouth.

The series includes 32 cases—15 men and 17 women—who, between them, have had 43 injections. There were three failures, two of which were complete and due to nervousness, while the third was not entirely successful owing to incomplete anæsthesia. Many of these patients were sent into hospital with a diagnosis of pulmonary tuberculosis or for observation and diagnosis under the suspicion of pulmonary tuberculosis. The amount of sputum in many of the cases was small, but in some five, six, and even twenty ounces daily were brought up.

It is worth noting that hæmoptysis was complained of in three cases. In one of these neoplasm was demonstrated; in the other two sputum, physical, and X ray examinations were negative, and not until lipiodol was used could the real condition underlying this symptom be shown—viz., bronchiectasis. This finding supports the view, based upon other examinations of the same kind, that some cases of hæmoptysis in which physical signs are entirely absent, and in which an X ray examination has been also negative, are not due to tuberculosis, but to bronchiectasis, and that this origin for the blood-spitting must be borne in mind and excluded in cases presenting this symptom before the diagnosis of pulmonary tuberculosis is made. It is probable that as the number of examinations by lipiodol increases this association will be recognised more frequently, and that certain cases of hæmoptysis hitherto regarded as tuberculous must be reviewed in the light of this possibility.

The number of cases in the table is not great, having been confined to those investigated by the method under review, but it is sufficient to indicate that there are few in which the intralaryngeal method may not be confidently expected to be entirely successful. How far it can be applied in children has yet to be shown, but it is unsuited for those below a certain age, when a general anæsthetic is usually necessary.

Method of Anæsthesia.

In the earliest attempts to work out a technique, the throat and larynx were anæsthetised with cocaine by means of a swab. This was unpleasant to the patient and caused so much discomfort that, by the time the anæsthetisation was completed, he was not in the best condition to tolerate the introduction of the lipiodol, and it became clear that an entirely satisfactory technique could not be evolved unless local anæsthesia could be produced in some other way. It was accordingly decided to use a specially designed atomiser but, owing to the necessity of holding it in the right hand whilst using the laryngeal mirror with the other, the method required unusual skill and was unlikely to be of general utility. The idea of using compressed air then suggested itself. There were difficulties to be overcome, and various methods were tried, more or less successfully.

Finally, it was found that the ordinary high-pressure compressed-air cylinder could be used quite satisfactorily if suitable conditions were complied with, and its introduction has greatly facilitated the procedure needed to obtain the desired degree of anæsthesia. It has not been necessary to use more than 25 minims of a 5 per cent. solution of cocaine, and of this quantity the major part is spat out of the mouth.

Introduction of Lipiodol.

Anæsthesia having been produced, there remains the problem of introducing lipiodol. This may be accomplished by injecting the oil directly into the trachea by means of an ordinary laryngeal tube and

syringe operated by the fingers and thumb of the right hand, whilst the laryngeal mirror is held in the left. In expert hands this is comparatively easy, but to the unskilled in laryngeal work it presents certain difficulties, and to simplify the method I have devised a syringe in which compressed air expels its contents, leaving the fingers entirely free to control the injection. In order to reduce accessory apparatus to a minimum, I have modified the ordinary form of laryngeal mirror with attached electric bulb, to render it more easy of manipulation. It is light, straight, and easily carried, avoids the necessity for a head mirror, and is more comfortable for use by an operator wearing glasses.

The details of the apparatus are as follows:—

The compressed air cylinder is controlled by an automatic pressure-regulator which performs the function of delivering the air at a pre-arranged working pressure, and of maintaining it at that level. It is provided with two gauges, one indicating the pressure, and so the amount of reserve air, in the cylinder, and the second showing the working pressure in the delivery tube. A safety-valve, which prevents excessive pressure being accidently produced in the apparatus, is also provided. A rubber tube fitted with a two-way tap and a bayonet joint conveys the air to the atomiser or to the syringe as may be required.

The atomiser consists of a glass container, graduated in minims, and of a narrow bore, which allows it be held at an acute angle without affecting its working. It is provided with two delivery tubes, a straight one to spray the soft palate and fauces, and a curved one for the larynx. It is controlled by a small valve clipped to the glass container and operated by the thumb or finger.

The lipiodol syringe consists of a glass or metal cylinder of the usual pattern fitted with a hollow piston moving freely in its interior. This piston can only be removed from the rear end of the syringe, a flange having been left at the forward end in order to prevent its accidental expulsion.

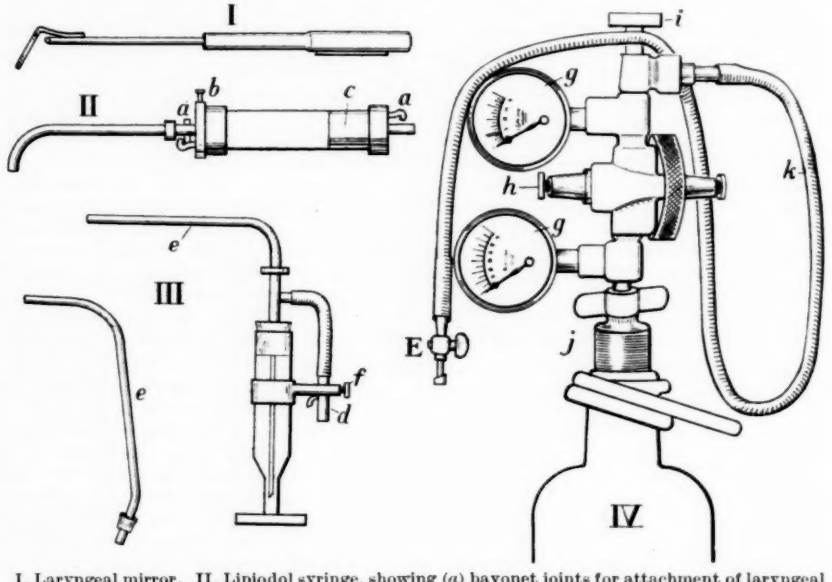
Screwed on to the barrel of the syringe are two metal end pieces, the one in front carrying a valve controlling the expulsion of its contents, whilst that at the rear is provided with a bayonet joint for attaching the two-way tap. The latter placed in the "on" position admits air to the piston, and when turned "off" cuts off the air supply and places the barrel of the syringe behind the piston in direct communication with the atmosphere, thus enabling the piston to be returned to the rear end for the purpose of refilling.

The laryngeal tube is removable, and is attached by a bayonet joint. It has not been thought necessary to graduate the syringe, as this tends to weaken the glass and occasionally leads to fracture on slight causes. An ordinary laryngeal mirror with lamp and head reflector can, of course, be adopted, but the special mirror will be found simple to use. Its means of illumination is the small battery contained in the handle, which consists of an ordinary pocket flash-lamp. The battery has a "life" of about two and a half hours if used intermittently, and is always obtainable. It is advisable to keep one or two spare batteries, and when the light begins to fail the battery can be replaced with a fresh one, and will regain its voltage if set aside for 24 hours.

In devising the apparatus I have attempted to make it as "foolproof" as possible, but there are one or two points which should receive attention in order to obtain the maximum efficiency. In assembling the parts of the syringe the flanged end should always be in front, otherwise—should the operator forget to turn off the two-way tap after use—the piston may be ejected when the front end is screwed off to refill. Secondly, unless the two-way tap is turned off when the injection is completed, the piston cannot be returned to the bottom of the syringe to allow of refill or removal. Thirdly, the piston must be inserted solid end first.

The apparatus is used as follows:—

The rubber connecting tube having been attached to the regulator valve, the latter, along with the two-way tap, should



I. Laryngeal mirror. II. Lipiodol syringe, showing (*a*) bayonet joints for attachment of laryngeal tube extension and two-way tap respectively, (*b*) finger-control valve, (*c*) piston. III. Spray, with (*d*) bayonet joint for attachment of two-way tap, (*e*) straight and curved laryngeal tubes, (*f*) finger-control valve. IV. Compressed air cylinder carrying automatic pressure regulator, (*g*) high and low pressure gauges, (*h*) safety valve, (*i*) regulator valve, (*j*) main compressed air cylinder valve, with lever folded, (*k*) rubber connecting tube carrying two-way tap *E*, which is fitted to the spray or syringe as required.

be opened. The main cylinder valve should now be opened slowly by gently striking the extended lever with the hand, and when the air begins to flow the two-way tap should be closed and the regulator valve left open. (It is unnecessary to open the main cylinder valve more than is sufficient to maintain a steady working pressure in the automatic regulator gauge.) The two-way tap is now attached by its bayonet joint to the atomiser and turned into the "on" position. The atomiser is used in the ordinary way, and is controlled by means of its own finger valve. When anæsthetisation is finished the two-way tap should be turned off and disconnected from the atomiser.

Meanwhile the front end of the syringe is screwed off, the piston pushed down as far as it will go, and the required amount of warmed lipiodol poured in. The end is now replaced, screwed down just sufficiently to be air-tight; the laryngeal tube, if not already in position, is attached by its bayonet joint, and, care being taken that the rear end is also screwed down air-tight, the two-way tap is turned on. With the syringe held vertically, the valve in front is carefully depressed until all the air is expelled; the valve is then released and the syringe is ready for use. The precise method of manipulation must be left to individual preference.

When the injection has been made the two-way tap must be turned off, thus releasing the air behind the piston; the front end can now be screwed off, the piston pushed back as far as possible, and the syringe refilled if necessary.

The following technique has been found to give the most satisfactory results: If the patient is bringing up much sputum the bronchi should be previously emptied by instructing him to lean over the side of the bed and to cough, whilst the head and shoulders are held as low as possible. Then the patient sits in a

chair facing the operator, and it is fully explained to him that the entire procedure is a simple one, and any apprehension he may have allayed. The lower teeth are covered with a swab, in order to protect the tongue, which should be protruded as far as possible and gently held by an assistant. The soft palate, fauces, and the posterior part of the tongue are sprayed, using the straight tube of the atomiser for this purpose. It is then replaced by the curved one, the laryngeal mirror is introduced, and the anterior and posterior surfaces of the epiglottis are carefully sprayed. This done, the end of the tube is passed down over the epiglottis and the interior of the larynx is sprayed. Passing the tube still further, the vocal cords are similarly treated, and, if thought necessary, the tube can be passed between the cords, and the upper part of the trachea likewise sprayed. Between each of these steps the patient should spit out the superfluous solution.

The atomiser is now replaced by the syringe, previously filled with warm lipiodol, and the patient told to cough and clear his throat of mucus, and afterwards to breathe quietly and in the normal manner, leaning towards the side into which it is proposed to introduce the opaque material. He should be carefully instructed to avoid coughing and swallowing whilst the injection is in progress and to make no attempt to phonate, but should he, for any reason, wish the injection to be stopped, to raise the hand, when the operator will remove the instruments from his mouth and make any readjustments that may seem desirable.

The curved cannula attached to the special syringe is passed over the epiglottis, the valve in front gently depressed, and the lipiodol allowed to flow between the vocal cords. Flooding the larynx, which may occur if the injection is made too rapidly, should be avoided. There is no special danger associated with this, but the patient may become alarmed and the operation interrupted.

When the injection is completed the best results are obtained if the patient is X rayed at once, both in the erect and recumbent positions. Afterwards he should not take any food or beverage for three or four hours, in order to allow the effect of the anæsthetic to pass off.

The actual injection can be made with the patient either sitting up or semi-recumbent on the X ray table when, if a little care is exercised, there is no special tendency for the oil to flow into the œsophagus, and it has the additional advantage that the patient is ready for the X ray exposure at once, or can be rolled to one side or the other, or the hips raised to enable the oil to flow in whatever direction may be desired. As there is no special inconvenience attaching to the operation and usually patients offer very little objection to repetition, it is probably better not to attempt to inject the whole of both lungs at one sitting but to make a second injection later, injecting not more than 20 c.cm. the first time.

Severe cough and large amounts of sputum do not contra-indicate the procedure and give rise to no inconvenience, provided the tubes or cavities are emptied by posture, as already indicated. In one case a patient coughed up six ounces of sputum just after the commencement of anæsthetisation, notwithstanding which it was completed and the lipiodol injected without further trouble. No special discomfort was complained of, and the result was quite successful. In only three of the cases referred to in the Table was lipiodol found in the stomach in any appreciable quantity. This occurred before the technique had been fully worked out. No tendency to swallow has been noticed, and in no case has a patient complained of any special discomfort either during or as the result of the operation.

The following solution may be conveniently used in the atomiser: Solution adrenalin (1–1000), dr. 2; potassium sulphate (2 per cent.), dr. 2; cocaine hydrochloride (10 per cent.), dr. 4; (acid carbol., 0·5 per cent., as solvent).

For those who require a smaller compressed-air cylinder the British Oxygen Company make one containing ten cubic feet only, which takes the standard regulator valve fitting. An oxygen cylinder may also be used.

I am deeply indebted to Dr. G. S. Todd, the resident medical officer of the Brompton Hospital, who has largely helped to work out the steps of the technique, and without whose skill and assistance it might have been difficult or impossible to perfect the operative procedure detailed. I am further indebted to Mr. Spence, the chief dispenser, for the valuable assistance which he has given me.

I wish also to record my thanks to Messrs. Down Brothers for their care and skill in making the apparatus from my drawings and calculations, and to the British Oxygen Company for the trouble they have taken in adapting the regulator valve for the special purposes required.

SOME CASES OF "TRAUMATIC NEURASTHENIA."

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The original conception of traumatic neurasthenia was recalled by Sir Farquhar Buzzard seven years ago in an address to the Oxford Medical Society[1] when he spoke of the view that "an injury of any degree of severity and inflicted at any site may produce a physical condition of the nervous system, with characteristic signs, but without any morbid anatomy, to which the name traumatic neurasthenia is fairly applicable." He showed how legal judgments are based upon the belief that there exists such a disorder which, having a name, is part of the established order of things and in no need of further definition. It should, however, be regarded as an emotional state, an anxiety neurosis, dependent not on any physical disturbance caused by trauma, but on a number of psychological factors. The condition is not the result of an injury, but of the knowledge that an injury has been sustained, together with the ability to shift the responsibility for the injury and its effects on to other shoulders.

Yet difficulties would remain even if the truth should become recognised that a condition of ill-health and disablement can be the result of psychological influences alone. A decision that compensation could not be recovered for neurasthenia following an accident might be the subject of an outcry, though the contrary decision is a direct encouragement to the development and maintenance of that state. The legal problem, however, said Sir Farquhar Buzzard, is not for us to solve, though sooner or later it must be faced. It is our duty to prevent the development of the condition, and our weapons must not be merely the advice to take plenty of exercise in the fresh air, and a bottle of medicine repeated week after week, but a free expenditure of time devoted to fathoming the contents of the patient's mind, and an honest endeavour to re-establish a healthy mental outlook.

[1] THE LANCET, 1923, ii., 1285.

With these views I am in almost complete agreement. I differ in so far as I think we must admit that an anxiety state can follow various kinds of shock in the absence of the compensation factor. In many cases that come to the stage of compensation the anxiety state occurs first, and is then neglected and allowed to develop, so that the unfortunate patient is given no alternative but to devote all his energies to the obtaining of compensation. The fears that make up so much of the symptoms of an anxiety state are not imaginary (whatever that may mean) but are to the sufferer as real as toothache. He sees in them a proof of damage to his nervous system (whatever that, too, may mean), and is compelled to cling to compensation as his only safeguard for the future. In cases that are treated early enough the man may eagerly grasp at a correct presentation of his state, seeing a gleam of hope hitherto absent through the belief in some mysterious injury to his nerves.

Thirteen years ago, in an article on the Early Stage of Hysteria,[2] I maintained that no example of hysteria had ever been accurately described ab initio, for the reason that anyone capable of recognising and describing it would not allow it to develop. Although the subject is not so simple as I then believed, yet my observations point to a similar deduction about traumatic neurasthenia. Even the medical men acting for accident insurance companies take for granted the old conception or, as so often happens in the minor psychoses generally, accept an initial diagnosis of some physical lesion that later gives way to the doubtfully more correct diagnosis.

This view of the preventable nature of hysteria and traumatic neurasthenia is perhaps not easily accepted by those who take the psycho-analytical view of the minor psychoses, which involves more subtle and complicated mechanisms. Experience compels me, however, to accept both views, and a sufficiently wide survey shows no incompatibility. My work for the Industrial Health Research Board[3] satisfied me that in the working population there is a reservoir of people who, suffering from symptoms that interfere only slightly with happiness and efficiency, are nevertheless ready to fall victims to any pseudo-neurological disorder that may offer itself. That disorder, though called into being by immediate causes, is intimately linked with the previous condition, and, if left to develop, becomes consolidated with it. Thus a traumatic neurasthenia is identical in its general structure with those other disorders for which psycho-analytical principles offer a pathology and a means of treatment; it differs from them in the influence of compensation in conjunction with the anxiety patient's fears about his economic future. An accident, some more or less severe anxiety symptoms, a false pathology accepted by doctors, lawyers, and the public, a lively apprehension about the future, together with compensation in place of understanding and rational treatment, make up a combination that has brought many a decent citizen to disaster.

Compensation Cases.

Last year I had the opportunity of examining a batch of miners receiving compensation for traumatic neurasthenia. They were examined at the rate of two per hour, and a physical examination was necessary, though in some cases it was only a placebo. The history of each case was before me, and the following notes will show what a medley is to be found under that unfortunate diagnosis and how each case presents a different problem.

CASE 1.—Aged 47. Married; two children, aged 6 and 11. Injury to head by fall of stone, July 25th, 1916. Suffered concussion. Returned to work August 24th, 1916. Resumed incapacity Oct. 9th, 1918. Doctor reported that he was suffering from bruised head and giddiness. Got work on the surface, and on April 11th, 1919, doctor reported: "He is in a very nervous condition, hands tremulous and pulse very rapid; probably neurasthenia following injury." In 1926 the matter was referred to the Miners' Welfare Committee, who stated they were not in a position to deal with cases of neurasthenia. Report on Nov. 15th, 1929, states: "Traumatic neurasthenia still very bad, very shaky, couldn't do anything."

The man showed coarse tremors. Described feelings of being stared at which prevented his going about. Had fears of traffic and described hallucinations of traffic going "contrariwise." There were puckered scars on the cheeks, and a tumour of the lower jaw, which was ankylosed. For three years he had "lived by suction."

The presence of the tumour—probably actinomycotic—overshadowed the nervous condition, which was a typical anxiety state.

CASE 2.—Aged 34. Two children, 10 and 3. Was injured by a shot on June 25th. The left eye had to be removed. Slight corneal scar on right eye. Face badly disfigured. Half right ear missing. On April 11th, 1922, doctor reported that the man had to wear blue glasses and would never be any better. On June 26th, 1927, a report said: "The most important effects of the explosion have been on the nervous system, and on the eyes. The effects on both have been severe. He shows all the signs of profound neurasthenia. The intolerance of light is due to this cause, not to the eye injury. A little improvement in the condition of his nerves would enable him to dispense with the very dark glasses which he wears; they are in themselves a depressing agent . . . . He needs to be got out of the rut in which he is at present. Otherwise he will make no progress."

The man appeared before me accompanied by his wife and wearing the darkest possible glasses. He showed the yielding grip that I regard as a hysterical stigma. Complained of headache and being kept awake by pain. "The panel doctor says it's the nerve at the back. It's the optic nerve. I go trembly when I am away from anyone. The least bit of trouble upsets me. I never go out. I have to sit and nurse my eyes. I've come out of bed to see you. I don't know where there's another man who's stood what I've stood." When I suggested that he should try to do without the glasses his wife said, "If he does that he'll have to go to bed altogether."

A hopeless case of hysteria with anxiety. The attribution of the hysterical photophobia to "profound neurasthenia" is, I am afraid, quite orthodox, like the reference to the condition of his nerves.

CASE 3.—Aged 36. Married; three children. On July 11th, 1929, was found to be suffering from shock, caused by witnessing a fatal accident to a fellow workman. Doctor reported that his pulse was very rapid and hands very trembling. On March 15th, 1930, doctor reported that the man was suffering from shock and the condition remained unchanged.

The man complained to me of pains in his head. Had a bad day last week when he felt down and out. Worries about money; is on light work. When asked to tell about the accident he refused. "I want to forget that. I try to forget it." Asked about dreams he said: "It's always one dream" (i.e., the accident). "My wife says I nearly jump out of bed. I have to keep to the shop side for fear of the traffic rushing at me. I see things in the dark. I must sleep with a light. It's always the one thing." At this point I suggested that perhaps if he talked to someone about the accident it might help him. He said: "I've always been on the hard side. I don't believe in telling people those things." Here he cried and admitted that he often cried when alone. For three weeks he had stuck it down pit, but fear made him sweat so much that his clothes "wanted to go through the mangle." When at work he felt all the time that the roof would come in again. I finally prevailed upon him to tell me about the accident. A fall of roof had buried one man, and whilst P. M. was directing rescue work another fall buried one of his mates. He tried to dig this man out; he felt him with his hands in the dark and could tell by the feel that he was dead. (He told this under obvious emotional restraint.)

The picture found on proper investigation is in wonderful contrast to the meagre account of his

[2] Brit. Med. Jour., 1918, i., 425.
[3] The Nervous Temperament. I.H.R.B. Report No. 61. H.M. Stationery Office.

condition first given, but he would have told me nothing about his real symptoms if I had not pressed him. The case is clear-cut, and any psychopathologist will agree that with informed treatment the prospect of recovery is excellent. The man was a stout-hearted fellow, and I feel strongly about the fact that, short of bringing him to London, there was no means of giving him that psychological treatment which would restore his peace of mind and efficiency. We must all accept the responsibility for our neglect of modern teaching and for clinging to the pernicious word "neurasthenia" and all that it involves. In this case a certain amount of technique would be necessary in the treatment. I refer to the process of abreaction, which is successful in recent cases like this: the effort to forget would perhaps be approved by some of my readers, but I can assure them that it is a disastrous way of handling such an experience. In the circumstances I did not venture there and then to use the method described in Case 11.

CASE 4.—Aged 33. Married; five children. Suffered an electric shock on June 8th, 1928. On June 30th doctor reported: "Effect of electric shock; does not look well; pulse rapid, says he is much better." He returned to work, but on Sept. 10th he broke down and had to be carried out of the pit. There was some difference of opinion as to whether his condition could be attributed to the shock. He was examined on Oct. 17th by a doctor who elicited anxiety symptoms, discussed the alternative of malingering, and reported that, "This man is suffering from neurasthenia, the direct result of the electric shock. In my opinion, although there may be some exaggeration, he is quite genuine in his complaints. I think a change at Skegness would brace him up." On Jan. 25th, 1930, a doctor reported: "He is anæmic and neurasthenic; could do a lot of work on surface."

At the interview his palms were sweaty and his grip tended to yield; he talked freely about aches and pains and his heart (these patients often withhold the anxiety symptoms until they recognise that these will be accepted as genuine). Then he admitted that he got scared and sweated. "I fancy things and dream awful; wake in a sweat. Can't sleep without a light. (Asked what would happen if his wife took it away.) "I'd soon move downstairs. Can't stand the kiddies talking. If you came behind me you'd set me off. I always dread the traffic; it makes me go all of a sweat. It's no good me going down as I am. A surface job might take a lot of this out of me." He said he had paid 8 guineas for massage in the hope of cure.

This man is in a severe anxiety state. Proper handling of the case from the start might have prevented this deterioration of a decent workman, but treatment would now be a lengthy matter and the outcome doubtful.

CASE 5.—Aged 69. On April 29th, 1927, a fall injured his head. He was trephined for a fracture just above the right mastoid, where there is a deep depression bigger than a half-crown. Doctor's report on Nov. 22nd, 1929, said: "Skull fractured; neurasthenic; looks well; pulse good; will never improve." Complains that he is deaf and that his head is all of a rumble. Gets shaky when standing. Jumps at a miss-fire. Can travel in a motor-bus. Goes to the pictures; reads books and newspapers. "Might as well be dead if I didn't have a bit of fun. I've smoked since I was 7 and it hasn't stopped my growth." He has a fear of losing his balance when he comes downstairs.

In view of this man's age and the severity of his injury, which affected the internal auditory apparatus, his mental outlook is very good and the diagnosis of neurasthenia is redundant under any hypothesis.

CASE 6.—Aged 40. Married; three children. Sustained injury to his back by a fall of bind on Oct. 17th, 1925. On March 6th, 1926, doctor reported "Concussion of spine; X ray report is 'fracture transverse process vertebra.' His back is doing well, but general nervous condition bad; I think a convalescent home at the sea is indicated." On March 31st, 1928, doctor reported: "The fracture united well and there was no organic lesion, but he was badly shaken and his nerves were upset. He had tachycardia for a time. For the last six months his pulse has been normal." Notice of reduction in the compensation was served, but the doctor reported that the reduction had so upset the man that at the moment the doctor considered he was unfit for work. He was therefore reinstated on full compensation. A note on Sept. 21st, 1929, says: "The colliery are unable to start him at the pit, and the man is trying to obtain outside work."

At the interview he complained that he was not feeling well. "My back gives way when I walk. I burst into a sweat if I slip. I get pain in the head on bending. The strength goes out of my legs. I can't stand the noise of picture shows. I get a pain in the privates." I asked: "Do you feel anything else the matter?" and pressed the question without eliciting further symptoms. His wife was present and I asked her: "How does he sleep?" She told of how she wakes him up because he makes all sorts of noises. The man, now asked about these noises, said: "I dream of the accident and the wife wakes me up," then admitted that he was restless and afraid in a room by himself (claustrophobia). Is frightened in the dark. "If I meet a cat or dog in the night I burst out all of a sweat. Nervous in a bus. On the pavement I keep thinking the buses are running into me." Asked whether he could go down pit if his back were all right he said, shamefacedly but sincerely, "It's not a nice place to go when you are frightened." He had given reactions to examination of his back that might be either hysterical or malingering.

This man had never told about his anxiety symptoms and would have withheld them from me if he had not realised that I was taking them seriously. It is possible that his back symptoms were deliberately feigned, but even if that were so I should not call him a malingerer. In the absence of recognition of his real symptoms he was compelled to develop hysterical symptoms or malinger them. I amused myself by asking why he had not told other doctors about his fears; he made no verbal answer, but I translated the look he gave as "I thought you had more sense than to ask me that."

A recognition of his true disability, even in the absence of treatment, might have saved four years being wasted in the expectation of a claustrophobe with a severe fear of the dark ever going to work again down the pit. In miners' nystagmus, which is a variant of traumatic neurasthenia, I believe that the night-blindness is a hysterical conversion of fear of the dark.

CASE 7.—Aged 32. Married; two children. On April 6th, 1927, was pinned between a fall of stone and a tram, was taken by ambulance to hospital and diagnosed fractured pelvis. On Oct. 24th doctor reported: "He walks fairly well on the level; there does not appear to be any tilting." He went back to work on Dec. 30th, 1929, but ceased the following day. On Jan. 6th, 1930, a report read: "He has a fractured pelvis, but a sitting down job 50 yards from the pit bottom has been found, and I think he is quite able to do it." On March 13th, 1930, it was stated: "There is a good deal of neurasthenia about this case." The man said he had never been free of pain since the accident. Couldn't bend. Sometimes has trouble with his water. Sweats between the legs. On examination he claimed hyperæsthesia to light pin-prick in the left lumbar and gluteal area, with pain to deep pressure. I flexed the right leg and said: "Of course you can bend this all right," and when I attempted to flex the left leg he resisted violently with loud groans. He stoutly denied any nervous symptoms. His wife likewise was annoyed that I should suspect them. Asked if he made noises in his sleep she said snappishly: "I don't stay awake to listen." I asked him if he walked "on the shop side of the pavement." He accepted that suggestion and explained that his walking was so insecure that he kept away from the kerb for safety.

I could suggest whatever physical symptoms I fancied, and have them accepted, but in the absence of nervous symptoms he regarded my search for them as an attempt to trap him. This mode of reaction is typical, and meets the common innuendo that those nervous symptoms found by the psychopathologist are suggested by him. I decided that the man's symptoms were a wilful attempt to deceive me. This case should be compared with the preceding one, with which it was identical on a superficial examination.

CASE 8.—Aged 46. Married, four children. On Dec. 24th, 1915, a piece of bind fell on his shoulder. He was taken

home in an ambulance. On Jan. 7th, 1916, doctor reported: "Severe bruise over lower dorsal and upper lumbar spines; sphincters were affected for two days." Work and incapacity alternated till June 15th, 1919, when doctor reported: "Slight lateral curvature of spine and marked tenderness over spinal column." On Jan. 28th, 1921: "There is marked apparent tenderness over the spine and slight curvature. Movement of the back is fairly good. He complains bitterly of local pain that keeps him awake. I am inclined to think the case is more one of traumatic neurasthenia than of real organic injury." On March 6th, 1929: "There is no improvement in his condition. He states that he is 42 but looks 55. Complains of headaches and pain in the back. He can only control urine by passing it frequently. He is suffering from traumatic neurasthenia and some light occupation would tend to improve his condition."

The man's appearance was worse than the above description indicates. Haggard, spineless, wasted, with clammy skin, he was a picture of despair. Said he had been crushed all over his body. His legs go dead and his head aches. He dreams of the accident still and wakes frightened (statement volunteered). His wife broke in with: "Yes, he frightens me. If he goes to sleep he's always in trouble." Is not afraid in a bus, and denies specific fears. I tried to put it to him that he had given up all hope, and let himself go downhill, but that the effect of the injury must have worn off by now, and he ought to try to get some pleasure out of life. My reward came from the wife, who said, as a farewell to me: "He'll be in bed a month after this."

CASE 9.—Aged 47. Married, four grown-up children. Was caught in a fall of coal on July 27th, 1923. On August 13th report said: "Crushed and bruised back and abdomen; he says that he vomited in the pit." On Oct. 22nd: "Alleged abdominal pain; his symptoms now are chiefly nervous; heart action very rapid." On Jan. 14th, 1924: "Valvular disease of the heart; pulse 130; he says he feels better." In June, 1926, doctor reported: "I attribute the rapidity and weakness of the heart to damage of the nerves of the heart caused by a severe crushing accident. The rapid action of the heart will tend to exhaust the heart and shorten life. I could discover no other cause likely to affect the heart in this manner, and with such a clear history available it is fair to attribute the man's condition to the accident." The man complained of his stomach and heart. "I'm beat to the wide. I got crushed and have not been right since. I go all of a jake." In answer to questions: "I always creep to the wall. It seems to be dread all the while." Has a fear of thunder—had it as a boy. Never went to pictures or to football. Wakes up frightened from bad dreams. Has given up smoking because of the effect on the heart. Pulse was 140 when resting; 160 after exercise; 132 two minutes later.

This man presented that syndrome, so common during the war called "disordered action of the heart" and invariably associated with its causative anxiety. He seemed to promise results from treatment and was sent to a physician familiar with this type of case, who wrote, however, warning me that he could rarely get good results in long-standing compensation cases and did not anticipate much benefit in this one.

CASE 10.—Aged 51. Married; two grown-up children. He alleged that on August 2nd, 1923, he got his head between a tub and a prop and bruised it. There is no evidence in the history that this happened or was of any severity if it did happen. He walked home, had supper, and told his wife he would have a smoke before going to bed. He seems to have gone away in a fugue state and was sent home by the police, who identified him by the tally attached to his pit clothes. His behaviour since has been very troublesome and erratic. Diagnoses have been offered of fright neurosis, melancholia, epileptic mania, and, of course, traumatic neurasthenia.

I found him a sensible man and he gave a history of various troubles of behaviour. I did not venture to add yet another diagnosis to the list, though I fear he will end up with a major psychosis. His initial fugue would probably have given up its secret to modern psychological technique, but it is not generally recognised that such technique is applicable to these cases.

The next case is given as a contrast to Case 3, and shows how a timely application of modern technique can at a single sitting arrest the process of deterioration. The diagnosis of neurasthenia was never made because the patient had the fortune to come under the charge of a woman medical officer, attached to her factory, who had discarded the diagnosis and accepted the psychological view. The following is the woman doctor's account of the case:—

CASE 11.—In the autumn of 1928, friends of the patient came to me to ask if I could do something for her as they were afraid she would do herself some harm; said they could not persuade her to be with them, that she persisted in keeping by herself, and stayed out all night walking by the Embankment. She would not eat and her work was suffering. These symptoms had arisen after the suicide of her father in July, 1928.

The patient, a forewoman aged 27, came to me very pale and thin; reticent to the point of sullenness. Would not answer when asked to tell what was the matter, but after a few general questions said that she had lost her appetite and could not sleep and was "terribly worried." She was living by herself, as she could not go home to her mother, who was queer and did not understand her and had made her father do what he did. Here she became emotional and cried bitterly. I made her lie down in a quiet and darkened room and asked her to tell me what she was thinking about. For a long time she wouldn't speak and then she said: "I can see it, the horrible thing. It's black and ugly . . . it's awful . . . . I can't, I can't." She buried her head in her arms and pressed her hands on her eyes. I asked her to tell me what she saw, and she sat up suddenly and screamed and then with eyes wide and staring she described how a policeman had taken her to a place and she saw her father with a terrible look about him lying in a black open coffin. She cried for some time and then became quieter and seemed to doze. Later her friends came and took her home; she appeared pleased to go with them. I saw her a few days later and she was much quieter but very silent; said she was sleeping better. I inquired from time to time how she was, and both she and her friends said there was a great improvement, but that she was still apt to have fits of depression and was a bit difficult.

In February, 1931, I had a long talk with her for the purpose of this history. She had gained weight, was pleased to talk, and answered questions helpfully, but was still a bit shy. She gave an account of family strife caused by a mother whose domineering qualities seemed pathological, and whom she still blamed for the father's suicide. She now felt that her father's death was not a dreadful thing, that he was at peace, and there was some sort of bond between them. She could think of her visit to the mortuary but at night the shadows on the wall seem to look like the black coffin. She made the best of her work, though she did not like it; her hobbies are walking, tennis, and music, with reading. Asked if she liked men she replied: "Not young men; they cannot talk to one. I like older men. . . . The only man I ever loved was Daddy." She is grateful to and fond of her women friends, who were good to her and put up with her when she was ill and difficult.

This woman is still hampered by a parental fixation, but a timely abreaction had produced a therapeutic effect unattainable by the prescription of bromides and advice to "forget all about it." I have no doubt but that similar treatment would have led to a similar result in Case 3. The next case illustrates a different method of handling a patient.

CASE 12.—Aged 34. Married; three young children. A skilled worker in compressed-air jobs. In June, 1930, an accident happened to the air lock. There was a rush for safety and this man was the last to get out. He was speechless, his stomach and neck were "drawn," and he was choking. This he attributed to the sudden change of pressure—i.e., to caisson disease. Now he complains of severe pains; goes giddy and staggers; has been picked up in the street and taken into hospital; describes having injections and inhalations (probably amyl nitrite); has been in four hospitals and his wife has been warned to prepare for the worst; gives accounts of various diagnoses. Has a severe fear of the dark. Never goes out alone. Is afraid to travel on trains. He is receiving compensation of 30*s.* per week, but does not know under what diagnosis. In January last he sought treatment at Richmond Hospital, where Dr. Geoghegan recognised the nature of his disorder and, judging him to be a decent man desirous of cure, asked me to see him. I elicited the history given above and confined my physical examination to testing his grip, which gave a hysterical reaction.

I gave him a straight talk, telling him that his symptoms had no relation to caisson disease, that they were the result of a severe fright which had upset his feelings and emotions, but that the most powerful microscope would find nothing wrong with his brain or nerves. It was for him to make the effort to recovery, but if he did not accept my view and make that effort he would go downhill and become a useless wreck. Then I demonstrated that his yielding grip was really under his control and that if he put his energy into it I could not open his closed fist. He and his wife took this onslaught so gratefully that I decided to help him to get treatment at the Tavistock-square Clinic and arranged to see him again at the end of a week. He came then, looking a different man, and said: "I've taken my medicine and am going to get well. I've come here alone, and that is the first time I have been out by myself for six months."

This case is not yet complete, but I have little doubt about the result. Clinically it is interesting on account of the unfavourable prognosis given to the wife—a story which I have no reason to disbelieve. I once described a case in which the patient had been put on the "dangerously ill" list and treated with powerful heart stimulants for a condition which a colleague was able to reproduce under hypnosis, to his own embarrassment and fright. I saw the patient myself in his attacks and he looked moribund, yet the whole trouble disappeared after the abreaction of a suppressed emotional experience.[4] In Case 12 the attacks are probably reproductions of the emotional experience at the time of the original accident and should be curable by abreaction, though the man's changed outlook may suffice to render that unnecessary.

Turning back to Cases 2, 4, 6, 8, and 9 we may ask whether those men had been given a fair chance of recovery and whether we are justified in the superficial view that they cling to their symptoms for fear of losing compensation. The situation has been thrust upon them as it is still being thrust upon numberless other victims of an out-of-date mytho-pathology.

A CASE OF THROMBOCYTOPENIC PURPURA.

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A young woman at the age of 18 began to notice that she bruised very easily and often without any obvious cause. Previously she had always been healthy—apart from measles, scarlet fever, and an attack of shingles in childhood—and there was no history of any similar complaint or other forms of bleeding in any of the other members of the family. Paying no attention to these bruises, she was not incapacitated in any way until a couple of years later, when she had a severe menorrhagia lasting about three weeks. Before this, menstruation had always been normal, but afterwards, while recurring regularly at monthly intervals, it would last ten days and the loss would be excessive.

Her doctor gave her two injections of Hæmoplastin and a short course of calcium lactate by the mouth, but these had no effect and she became, in consequence, pale and anæmic, suffered from faintness, and had some œdema of the ankles after standing. Gynæcological treatment was next undertaken. The cervix uteri was dilated and the uterus curetted, and seven weeks later radium was inserted into the uterine cavity for 24 hours. Her blood count at this time was :—

Red cells	2,900,000 per c.mm.
White cells	11,000 " "
Hb (hæmoglobin)	32 per cent.
C.I. (colour-index)	0·5
Plat. (platelets)	96,000 per c.mm.
Retic. (reticulocytes)	Not counted.

Next she took cooked liver for about seven weeks. She tried ¼ lb. daily but did not like it, and only managed to take about half this daily quantity. Her condition was in no way alleviated, and, six weeks after stopping the liver, she was admitted to hospital under my care. During these six weeks she had had two severe attacks of menorrhagia, lasting 12 and 11 days respectively, and a third, less severe, lasting seven days, and one attack of nose-bleeding.

She was now 21 years of age, 8 st. 4lb. in weight, well nourished, but very anæmic. Examination revealed large subcutaneous bruises on the limbs, and a few purpuric spots on the chest and above the left ankle. The spleen measured 3¼ in. on percussion, the liver was not enlarged, there were no enlarged glands, and the heart was within normal limits. Two teeth were rather carious, but no other features of note were to be made out except on examination of the blood. Blood examination at this time (Feb. 28th, 1929) showed :—

Red cells ..	2,000,000	Polymorph. ..	69 %
White cells ..	12,200	Eosin.	1 %
Plat.	15,000	Lymph.	22 %
Retic. ..	0	Large mono. ..	7 %
Hb	25 %	Mast	1 %
C.I.	0·56		

Red cells poorly stained. Average diameter less than normal; no nucleated reds or poikilocytes present.

The case was considered to be one of chronic thrombocytopenic purpura and, as the patient was averse from operation, the opportunity was taken to observe the effects of various remedies on the condition, and especially on the blood-platelets. With this object in view, the blood was examined regularly at weekly or bi-weekly intervals, while the patient was in hospital and afterwards at longer intervals. It was obvious that such liver treatment as she had had already over a period of seven weeks had not increased the number of platelets in her blood stream or alleviated her condition generally.

EFFECT OF VARIOUS REMEDIES.

She was tried first (Feb. 28th) on calcium lactate, grs. 15 t.i.d. orally, and at the end of one week it was found that the red cells had increased to 3,600,000 per c.mm. and the hæmoglobin to 30 per cent., but the white cells had fallen to 6200 per c.mm., and the platelets were unchanged (15,200 per c.mm.); subcutaneous bruises continued to appear spontaneously.

The calcium lactate was continued but cod-liver oil emulsion (2 drachms twice daily) was then given also, and ultra-violet light administered twice weekly. It was thought that the vitamin D in the cod-liver oil might assist the calcium metabolism, and that the ultra-violet light, as well as the vitamin A in the oil, might produce an increase in the blood platelets. In this connexion it may be recalled that Cramer, Drew, and Mottram [1] found in rats that the blood-platelets were reduced in vitamin A deficiency, and that the addition of the missing vitamin A to the diet was followed by a rapid rise in the number of platelets, provided that the animal had not been allowed to suffer too long and too severely from the deficiency. In further experiments these authors [2] found that exposure to ultra-violet light increased the number of platelets in rats whose platelet count

[4] Psychoneuroses of Peace and War. Cambridge, 1920, p. 112.

had been reduced through being born and kept in darkness on a diet of low vitamin content.

At the end of a week's treatment with ultra-violet light, cod-liver oil and calcium lactate, the patient's red cells had increased to 4,100,000 per c.mm., but the hæmoglobin had remained at 30 per cent., the white cells at 6000 per c.mm., and the platelets at 15,600 per c.mm., and subcutaneous bruises continued to appear spontaneously as before, although her general condition seemed better.

Parathyroid tablets (gr. 1/10th = gr. 1 fresh gland) orally, twice a day, were then added to the treatment, for any possible effect they might have in assisting the distribution of calcium in the body. This combined treatment—calcium lactate grs. 15, t.i.d.; parathyroid tablets therapy and tinct. ferri perchlor. were now stopped and the patient was given ferri et ammon. cit. grs. 10, t.i.d., for the succeeding three and a half months. The hæmoglobin increased steadily to 76 per cent., the red cell count remained about normal, but the platelets were practically unaffected until the occurrence of a prolonged (15 days) and severe menorrhagia six weeks after starting the citrate of iron and ammonia. They then shot up to 100,000 per c.mm. Ten days after the cessation of this menorrhagia another attack occurred for about seven days and the platelets then shot up to 185,000 per c.mm., but fell again, two weeks later, to 110,000 per c.mm. Spontaneous subcutaneous bruises had continued to appear from time to time—and occasionally purpuric spots—but nevertheless the patient's general condition was now very good indeed and she left the hospital

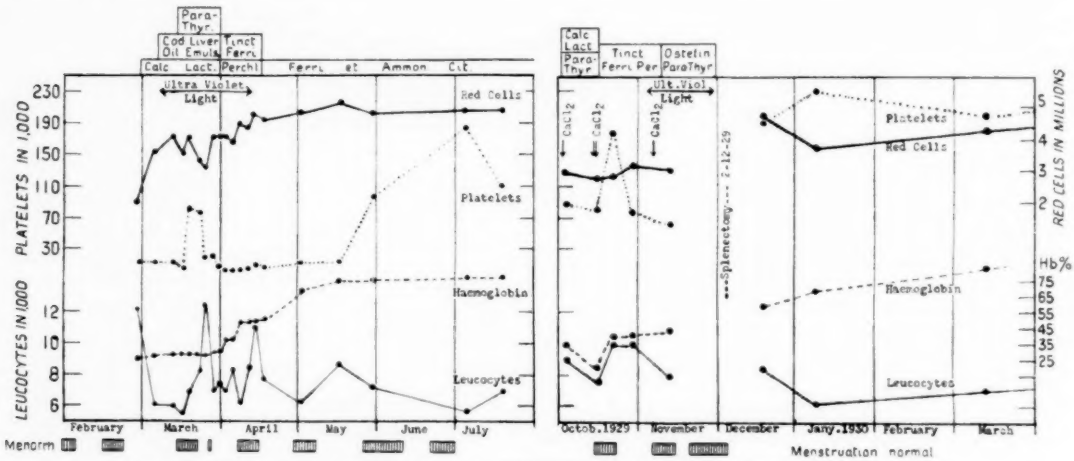

Chart showing effect of various forms of treatment, including splenectomy on Dec. 2nd, 1929.

gr. 1/10th, b.d.; cod-liver oil emulsion 2 drachms, b.d., and ultra-violet light twice weekly—was kept up for another three weeks, but no further improvement was produced in the blood. At the end of this time (March 30th) the blood count was:—

Red cells, 4,180,000; white cells, 7500; platelets, 9200; Hb, 30 per cent.; C.I., 0·37.

A week after the above combined treatment was started the patient had a distinct relapse. Menstruation set in and persisted for seven days, fresh crops of purpuric spots and more bruises appeared, and the patient's general condition seemed much worse. This relapse, however, was associated with an intercurrent rise in the platelet count. At the onset the platelets shot up to 85,000 per c.mm., but they fell again to 25,000 per c.mm. within nine days and to 9200 per c.mm. three days later.

The cod-liver oil, parathyroid, and calcium lactate were now stopped, but the ultra-violet light was continued twice weekly and tinct. ferri perchlor., ♏ xv., was given orally every six hours for a further two weeks. The hæmoglobin now began to increase in amount and the red cell count improved still more, but the platelets were unaffected. The patient's general condition also improved and, although never absent entirely, new bruises occurred less frequently. Menstruation recurred for six days, the interval from the preceding flow being just over three weeks. At the end of the fortnight's treatment with tinct. ferri perchlor. and ultra-violet light the blood count was as follows:—

Red cells, 4,870,000; white cells, 11,000; platelets, 12,000; Hb, 52 per cent.; C.I., 0·5.

The patient had now had five and a half weeks' treatment with ultra-violet light and no increase in the blood-platelets had occurred. During the first week of the treatment the patient also received orally calcium lactate and cod-liver oil and, notwithstanding the vitamin A of the latter, only the red cells were affected—rising from 3,600,000 per c.mm. to 4,100,000 per c.mm. During the succeeding three weeks, when parathyroid was also administered orally, no further change in the blood took place. Then, at the end of this period, on substituting tinct. ferri perchlor. for the cod-liver oil, calcium and parathyroid, for the first time the hæmoglobin began to rise. It increased from 30 per cent. to 52 per cent. in less than a fortnight and the red cell count improved still further.

It was obvious that the ultra-violet light had produced an increase in the red cell count only, and that iron was needed for the formation of hæmoglobin. The ultra-violet light (see Figure). At the end of her course of treatment with ferri et ammon. cit. the blood count was as follows:—

Red cells, 4,900,000; white cells, 7000; platelets, 110,000; Hb, 76 per cent.; C.I., 0·76.

FURTHER PROGRESS.

The patient remained in fairly good health for the next seven weeks, and then she had another severe menorrhagia, and felt so ill and faint that she had to go to bed. A fortnight later she was transferred to hospital again under my care. Blood examination at this time (Oct. 3rd) showed:—

Red cells	3,000,000	Polymorph.	75%
White cells	9,000	Eosin.	1%
Plat.	92,000	Lymph.	18%
Hb	35%	Large mono.	6%
C.I.	0·53		

Red cells poorly stained—many showing marked central pallor. Coagulation time practically normal (Dale and Laidlaw's method).

An intramuscular injection of calcium chloride was administered at once and calcium lactate, grs. 15, t.i.d., and parathyroid tablets, grs. 1/10th, b.d., were given orally for ten days, but the red cells, white cells, hæmoglobin, and platelets decreased further and the patient got much worse. She became very weak and ill, pallor increased, and severe menorrhagia again set in at the end of a week (Oct. 13th). On the day following the onset of the bleeding the blood count was:—

Red cells	2,800,000	Polymorph.	64%
White cells	7,800	Eosin.	1%
Plat.	85,000	Lymph.	26%
Hb	20%	Large mono.	8%
C.I.	0·32	Mast	1%

Coagulation time about a half longer than normal.

On this day she was given two intramuscular injections of calcium chloride and put on tinct. ferri perchlor. grs. 15, six-hourly. A week later the vaginal hæmorrhage stopped and the patient had an attack of acute abdominal pain, lasting throughout one night, and aching pain in both legs, especially behind the knees, lasting about a week. On the day following the attack of acute abdominal pain and cessation of the menorrhagia, a blood examination showed that the platelets had shot up to 180,000 per c.mm.,

but a week later they had fallen to 78,000 per c.mm. On both occasions, however, the coagulation time was practically normal. The two weeks' treatment with tinct. ferri perchlor. alone produced a rise in the hæmoglobin of 20 per cent. (from 20 per cent. to 40 per cent.), but the red cell count was increased only by 400,000 per c.mm. (from 2,800,000 to 3,200,000 per c.mm.). Ultra-violet light therapy was then given twice a week and the tinct. ferri perchlor. continued. Two days later (Nov. 6th) menorrhagia again set in and, in spite of an intramuscular injection of calcium chloride, persisted for six and a half days. In the middle of this period of menorrhagia the tinct. ferri perchlor. was stopped and vitamin D, in the form of Ostelin and parathyroid t.i.d., substituted.

The combination of ultra-violet light and ostelin with parathyroid was continued for a fortnight, and at the end of that period the red cells had risen to 3,900,000 per c.mm. and the hæmoglobin to 44 per cent., but the platelets had fallen to 62,000 per c.mm. The coagulation time was normal. The patient's general condition was no better, menorrhagia recurred (Nov. 20th) at an interval of seven and a half days from the previous attack, headache and abdominal pain were troublesome, and fresh petechial spots appeared. She had never been completely free from spontaneous subcutaneous bruises, and at last she agreed to have splenectomy.

SPLENECTOMY.

The operation was performed on Dec. 2nd by my colleague, Prof. A. W. Sheen, and two days later the vaginal hæmorrhage, which had persisted for 14 days, ceased, and recovery from the operation was uneventful. The next examination of the blood was done 16 days after the removal of the spleen (Dec. 18th), and revealed the following :—

Red cells ..	4,630,000	Polymorph. ..	70 %
White cells ..	8,600	Eosin.	1 %
Plat.	192,000	Lymph.	18 %
Hb	60 %	Large mono. ..	10 %
C.I.	0·6	Mast	1 %

Red cells mostly of normal size and shape with fairly good colour. Coagulation time normal.

Three weeks later (Jan. 7th, 1930) the blood examination showed :—

Red cells, 3,500,000 ; white cells, 6200 ; platelets, 232,000 ; Hb, 70 per cent. ; C.I., 0·9. Red cells well stained and normal in size and shape. Coagulation time normal.

Two months after this (March 12th, 1930) the blood count was :—

Red cells, 4,270,000 ; white cells, 7100 ; platelets, 206,400 ; Hb, 84 per cent. ; C.I., 0·88. Red cells well stained and mostly normal in size and shape.

The patient continued to make satisfactory and uninterrupted progress after the splenectomy. Menstruation became normal, the recurrence of subcutaneous bruises and purpuric spots ceased, and the skin and mucous membranes acquired a good healthy colour. She had three teeth extracted a month after the operation, and there was no excessive bleeding. Five months after the splenectomy (May 1st) the blood count was :—

Red cells, 4,460,000 ; white cells, 7600 ; platelets, 219,000 ; Hb, 90 per cent. ; C.I., 0·9.

The patient was last seen about 17 months after the splenectomy and was very well indeed. There had been no recurrence of any symptoms whatsoever, and menstruation had remained normal (see Figure). The blood count on this date was :—

Red cells, 4,660,000 ; white cells, 8200 ; platelets, 18,000 ; Hb, 96 per cent. ; C.I., 0·96.

SUMMARY.

(1) A case of chronic thrombocytopenic purpura is recorded in which menorrhagia was a special symptom. (2) Ultra-violet light therapy produced no effect on the blood-platelets even when associated with the internal administration of vitamins A and D, in the form of cod-liver oil, and of calcium and parathyroid. (3) The red cell count was increased by ultra-violet light therapy, but no increase in the hæmoglobin content of the blood was produced until the internal administration of iron was begun. (4) Calcium intramuscularly and orally had no effect on the blood-platelets. (5) The disease persisted in spite of all the above forms of treatment, and the administration of liver did not affect it. (6) Splenectomy relieved all the symptoms and cured the disease at once, the blood-platelets rising quickly to, and persisting about, 200,000 per c.mm., and the red cells and hæmoglobin reached normal a little later. (7) Seventeen months after the splenectomy the patient was very well, the blood-platelets were 180,000 per c.mm., and the red cells, white cells, and hæmoglobin had remained normal.

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CLINICAL AND LABORATORY NOTES

INTRALIGAMENTARY ECTOPIC PREGNANCY.

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THREE somewhat unusual cases of intraligamentary ectopic pregnancy have recently been treated at the Glasgow Royal Maternity and Women's Hospital. They are worthy of note in so far as they presented some similar and atypical clinical features.

Mrs. A., aged 40, para-5, last pregnancy seven years' previously, was admitted as a case of threatened abortion with a history of slight vaginal hæmorrhage of ten days' duration. Her last menstrual period had been six weeks previously. There had been some degree of menorrhagia before her missed period. Apart from vaginal hæmorrhage she had no other complaint and felt comparatively well. Bimanual examination revealed a retroposed uterus of normal size with a stony mass in the right and anterior fornix. There was no tenderness on examination. A diagnosis of fibromyoma of uterus complicating pregnancy was made and the patient was kept in bed for six weeks. During this time she remained well, but as vaginal hæmorrhage persisted and abortion appeared inevitable, laparotomy for myomectomy or hysterectomy was decided upon. At the operation a right-sided intraligamentary ectopic pregnancy was found and removed along with the tube. The uterus was healthy and lying twisted behind the mass.

Mrs. B., aged 36, para-2, last pregnancy ten years' previously, was admitted as a possibly incomplete abortion. She gave no clear history of having missed a period but complained of irregular hæmorrhage of two months' duration. Apart from vaginal hæmorrhage she had no complaint. Bimanual examination revealed a retroverted uterus of normal size with a hard mass in the right and anterior fornix indefinable from the uterus. No tenderness was elicited. A provisional diagnosis of fibromyoma of uterus or parovarian cyst was made and laparotomy was performed. Again an intraligamentary ectopic pregnancy was found separating the layers of the broad ligament and encroaching on the utero-vesical space, commencing to strip the peritoneum from the bladder.

In these cases the noteworthy features were the entire absence of pain. In neither case was sickness, nausea, or occasional faintness a complaint. No tenderness was elicited upon vaginal examination. The mass was much harder in consistence than might be expected, and apart from vaginal hæmorrhage both patients were healthy and comfortable. The pathological examination of the first specimen showed it to have undergone a mole degeneration. In the second case the sac was intact and complete with

fœtus in situ and chorionic villi were embedded in the broad ligament.

The third case was something of a rarity—a patient with an advanced intraligamentary ectopic pregnancy being delivered by operation of a well-developed child weighing 6¼ lb. Here again the clinical picture was unusual.

The patient, aged 44, 3-para, had her last confinement 12 years' previously. She was recommended for admission on account of albuminuria. Her menstrual history was confused but she was quite definite as regards a period of amenorrhœa of eight months' duration. She was so obese and œdematous that it was impossible to make out definite uterine enlargement of fœtal parts. Radiography, however, showed fœtal bones corresponding in size to an eight months' fœtus and the Zondek-Aschheim test was positive. The urine contained albumin (4 12 parts Esbach) and the blood pressure was 150 mm. Hg systolic, 80 mm. diastolic. Despite treatment over 15 days the patient's condition did not improve: in fact, she was growing gradually worse. It was decided to induce labour by means of insertion of a pig's bladder. Under the anæsthetic it was found that the uterus was not enlarged. The passage of a sound confirmed this. No further attempt was made therefore to induce labour.

The patient was operated upon and an advanced intraligamentary ectopic pregnancy was found. The live child was removed and the placenta, which was situated between the layers of the broad ligament, was removed entirely with the sac. There was very little loss of blood. The patient's condition before operation was poor. After operation it became steadily worse and despite blood transfusion and other treatment she died 16 days later. Post-mortem examination confirmed the operative findings and showed peritonitis and chronic nephritis. The child, however, continued to thrive and was discharged a month later.

I wish to thank Dr. R. A. Lennie and Dr. J. Hewitt for permission to publish these cases.

EXCESSIVE SPONTANEOUS INFLATION OF A LUNG CAVITY.

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Ballooning of the lung, a somewhat rare pulmonary condition, was first described by R. Hall[1] as an occasional complication of advanced pulmonary tuberculosis. The condition thus described is one in which the entrance from the bronchus into a lung cavity becomes obstructed in a valve-like manner, presumably with a piece of necrotic tissue, and thus allows the ingress of air during inspiration but prevents the egress during expiration. The cavity being, as it were, pumped up then presses like a balloon on the remaining lung. The symptoms and physical signs produced by this mechanism resemble, in a modified way, those of a spontaneous pneumothorax, to which, in fact, the whole process is very similar. During the inflation of the cavity the walls tend to stretch, and, if they burst, the main and neighbouring cavities break down and enlarge the balloon.

Little interest appears to have been directed to this somewhat rare condition, and I know of no case in which the diagnosis has been confirmed by manometric and radiological examination. The following case, however, suggests that the matter has a practical and therapeutic, as well as an academic, aspect.

A female, aged 21, was admitted to the Massereene Hospital on Feb. 2nd, 1931, as an advanced case of pulmonary tuberculosis. Her history was a typical one, and had lasted for 18 months. During the summer and autumn of the year 1930 she had spent some months in a sanatorium, but had failed to respond adequately to rest. She was further known to have had morbus cordis for some years; mitral stenosis and incompetence, considered to be rheumatic, had been marked for some time, though there had been no obvious evidence of impairment of cardiac efficiency. Tubercle bacilli in large numbers had been found in every recent sputum examination. After admission, she was found to be acutely febrile, with physical signs of infiltration and cavitation in the middle and lower zones on the right side. In view of the extent of toxæmia, it was considered that neither an artificial pneumothorax nor a phrenic evulsion would offer her any material assistance, and no special treatment was undertaken.

On Feb. 18th she developed very severe and distressing pain, fairly consistent in character, on the right side and situated laterally and posteriorly towards the lower costal margin. On examination anteriorly, the percussion note was found to be normal and the breath sounds practically absent on the right side; in spite of the absence of cardiac displacement, first impressions suggested spontaneous pneumothorax. Posterior examination, however, appeared to exclude this, for the percussion note was still definitely dull towards the base, and on auscultation loud cavernous breathing was heard in this region. The pain continued during the next week, until Feb. 25th, and was not fully controlled even by morphia.

On Feb. 25th, finding the physical signs unchanged and suspecting the superinflation of a cavity, I inserted a pneumothorax needle directly through the chest wall posteriorly, in the eighth intercostal space. The manometer indicated a pressure definitely greater than that of the atmosphere, the readings varying with respiration between +4 and +6 cm. of water. The needle, on insertion, was definitely felt to be traversing the several layers of the chest wall, and a further resistance, which would respond to the thickened and necrotic wall of an adherent lung cavity. After the withdrawal of 100 c.cm. of air, the pressure was found to approximate to that of the atmosphere, the manometer readings now varying between +2 and −2. Following the withdrawal of another 100 c.cm., there was found to be no change in the manometer readings, and, concluding that air was entering via the air passages at the same rate that it was being aspirated, the pneumothorax needle was withdrawn. After this procedure there was no marked change in the physical signs, but the pain was found to be somewhat relieved and disappeared within a few hours. The patient continued to go downhill, developed diarrhœa, and finally died on March 30th, without very much discomfort and with no recurrence of the pain.

Unfortunately, no radiological examination was possible at the period referred to, though an earlier skiagram, taken elsewhere, in the summer of 1930, which I was courteously allowed to see, showed much infiltration with commencing cavitation in the right lower zone. Unfortunately, again, an autopsy was impossible.

In this case it is clear that there was a balloon condition of some space in the chest, causing great pain by its pressure on surrounding structures, which was greatly relieved by deflation. It is difficult to exclude the possibility that the needle was really introduced into a localised spontaneous pneumothorax with a thickened visceral pleura, but the following considerations render this unlikely: (*a*) If the pleura had been thickened to such an extent as to cause such impairment of percussion note, adhesions would almost certainly have developed and prevented a pneumothorax of the extent necessary to have accounted for the symptoms. (*b*) The point of the needle definitely felt to be in a large cavity and, further, a large cavity would have been necessary to account for the diminished breath sounds anteriorly; such a large pneumothorax would probably have caused some degree of cardiac displacement. (*c*) The point of the needle, on introduction, definitely felt to be piercing some lung tissue.

In either case it is difficult to account for the loud cavernous breathing heard, but, if dealing with a lung cavity, it might be due either to the continued entrance of air into a nearly contiguous cavity, or to the conduction of sounds directly from the trachea or large bronchi into the stationary air at the end of the

(*Continued at foot of next page.*)

[1] The Lancet, 1922, i., 61.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN EASTBOURNE.

PROCEEDINGS OF THE REPRESENTATIVE BODY.

(*Concluded from p. 189.*)

An objection to the report of the Council on the problem of the out-patient was raised by Dr. A. H. MACKLIN for Dundee.

Out-patients in Distressed Areas.

He introduced an amendment stating that, under present conditions, there was a considerable class, especially wives and children of insured persons, who were unable to secure adequate medical attention from their own resources, and for whom the only service obtainable was that of the voluntary hospitals, unless they were to be constrained to apply to the public assistance authorities. In his area, Dr. Macklin said, there was much economic depression, and no public medical or contract services were in force. If the Council's report were put rigidly into operation a large number of persons in Dundee who were out of work would be unable to get any treatment at all. That was to say, they would either be forced to go without treatment, or else they would apply for public assistance. As far as the dependants of the insured persons were concerned, it would be difficult to bring them into any insurance scheme later on if they had once acquired the habit of going on the parish. He thought the report should be more elastic in its application to depressed areas. Contract services were not regarded favourably in Dundee, and could not be accepted as a solution.—He was supported by Dr. G. W. MILLER, also of Dundee, who thought it would be advisable to wait until the dependants of insured persons were included in an insurance scheme before adopting this report. As a temporary measure it was preferable that these people should be treated as out-patients than that they should come under the public assistance officer.—Dr. E. R. FOTHERGILL took exception to the wording of the Dundee amendment, which made no reference to economic conditions, and which implied a reflection on the medical practitioners of Dundee.—Dr. E. H. T. NASH described a scheme applying to women and children which was successfully in force in the Thames valley, and which made medical service available to them at a rate approximate to that of National Health Insurance.

Dr. H. B. BRACKENBURY thought that the Dundee amendment destroyed the whole value of the report. The meeting need not suppose if the report were adopted that it would immediately be rigidly enforced. It would simply constitute a basis, similar to the hospital policy, upon which further progress could be founded. Persuasion and education of hospital authorities would naturally be the first steps, and Dundee need not be alarmed for the immediate future.—On this assurance Dr. MACKLIN consented to withdraw his amendment. After some further discussion of minor points the report was approved by the meeting.

Public Medical Services.

Arising out of the report, a resolution was moved by Dr. A. KEITH GIBSON, for Kensington, to the effect that as a practical contribution to the problem of the out-patient the Association should actively assist in the formation of public medical services wherever these were not already in operation. During the preceding discussions, he said, attention had been called to the difficulties of reducing overcrowding in out-patient departments. At first glance it seemed to be merely a question of achieving agreement between the consultant at the hospital and the general practitioner, but actually the boards of management of hospitals would probably feel dissatisfied if much of the hospital out-patient work were to pass into the hands of the private practitioner. If organisations could be built up on the lines of the public medical services which were now active in several parts of the country, they would offer a sound demonstration to boards of management that adequate care could be provided for this large group of persons outside hospitals. Such medical services had the additional advantage of limiting, in some measure, the encroachments of clinics on private practice. Kensington was aware that the feeling of the Association was by no means unfavourable to contract practice of this kind, but it was hoped that the Representative Meeting would be willing to sanction active assistance on the part of the Association in establishing more public medical services throughout the country.

Dr. BRACKENBURY admitted that the Council was certainly favourably disposed to contract services, and said that the Association had even lent sums of money, on occasion, to further their establishment. But there could be no doubt that, whereas some areas were favourable for the foundation of contract medical services, others appeared to be quite unsuitable, and the Council would not feel justified in undertaking a crusade to establish them in every area.—Dr. J. LOCKHART LIVINGSTONE supported the Kensington motion, but Dr. E. WALLACE HENRY said that, in view of Dr. Brackenbury's remarks, it was scarcely possible for the meeting to pass the resolution; at the same time, however, he felt that it was undesirable that the Representative Body should appear to disapprove of the principle by rejecting the motion. He appealed to Dr. Gibson to withdraw the motion. This Dr. GIBSON did not feel in a position to do, and the meeting agreed to pass to the next business.

Consultant Services in Contract Schemes.

Sir RICHARD LUCE moved a recommendation of the Council—

That any scheme providing consultant or specialist services for patients of the class such as constitute the members of a contributory or other similar scheme, should include the following principles:—

(1) That where it is desired to provide consultant and specialist services for "contributing" patients defined in para. 42 of the Hospital Policy of the Association, a panel of consultants and specialists should be formed.

(2) That all registered medical practitioners who satisfy one or more of the following criteria should have the right to have their names included on the panel: (*a*) That he has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service rendered, and has had actual recent practice in performing the service rendered or services of a similar character; or (*b*) that he has had special academic or post-graduate study of a subject

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(*Continued from previous page.*)

obstructed bronchus, the very small proportion of tissue probably forming the obstruction and the stationary air in the cavity.

On the whole, I consider that this case may be definitely accepted as proving by manometric control the occasional existence of a condition of super-inflation of a pulmonary cavity, and that associated symptoms may at times be relieved by aspiration of the contained air. Further, there may not necessarily be a recurrence of the mechanism after deflation.

which comprises the service rendered, and has had actual recent practice as aforesaid; or (c) that he is generally recognised by other practitioners in the area as having special proficiency and experience in a subject which comprises the service rendered.

(3) That the decision as to satisfactory compliance with the criteria for admission to the panel should be vested in a purely professional body upon which the different classes of specialist and consultant are adequately represented, and which would be recognised by the profession as securing impartiality.

(4) That there should be an agreed schedule of reduced fees.

The need for such a motion, he said, depended on the action of the Hospital Saving Association, who were trying to arrange special consultation fees for their patients. The hospitals committee felt that it was not in accord with the principles of the B.M.A. that such special rates should be limited to a group of individuals, members of a particular organisation. They had therefore drawn up the above scheme, which was based on four criteria. First, a panel of consultants should be available; secondly, any medical practitioner should be eligible to serve on that panel provided he fulfilled the requirements stipulated; thirdly, a purely professional body should be responsible for deciding whether applicants met these requirements; and fourthly, service should be given at reduced fees.

Dr. A. GREGORY (Manchester) objected to the word "reduced" as applied to the fees asked, since he considered that it would limit unduly the action of those serving on the panel.—Dr. BRACKENBURY considered that the whole point of the service lay in the fact that it was to be given at reduced fees. If there was to be no reduction there might as well be no service.—Dr. N. E. WATERFIELD (Reading) pointed out that what was a reduced fee for some consultants was not necessarily reduced for others; he thought a fixed schedule was essential, but that there was no need to make any reference to reduction.—This view was shared by Dr. W. F. DEARDEN.—It was agreed that "reduced" should be omitted.

Mr. BISHOP HARMAN suggested that para. (3) of the motion should contain some reference to the machinery by which a practitioner might be removed from the panel, and suggested that the paragraph should be referred back to the Council. Although Sir RICHARD LUCE was ready to accept this proposal, Dr. BRACKENBURY thought it was unnecessary, since these were merely the general criteria, and the consideration of further detail might well be postponed until the Association was contracting with another party to provide such a service.

Views were divided. Sir ROBERT BOLAM felt that, as the motion included certain principles it should be possible to find a form of words to replace para. (3) in which it would be set out in general terms that consultants admitted to the panel should abide by the rules laid down for the service. This, however, proved to be much more difficult than he had supposed, and after prolonged discussion the meeting agreed on the following form of words:—

That there should be vested in a purely professional body or bodies upon which the different classes of specialists and consultants are adequately represented and which would be recognised by the medical profession as securing impartiality, the decision as to satisfactory compliance with the criteria for admission to the panel, and every applicant for inclusion in such panel shall sign an agreement that if admitted to the panel he will abide by the decision of such professional body or bodies as to his continuance on the panel.

Even so, when this appeared as a substantive proposition, certain fallacies were detected in the amendment by some of the more precise logicians present. It proved to be one of those occasions when everyone was agreed on the substance, but universal satisfaction with its expression was not to be won. The meeting finally adopted the complete recommendation of Council as amended by Dr. GREGORY, with the rider that the Council should be asked to consider Sir Robert Bolam's amendment as a possible substitute for para. (3).

Another motion, introduced by Sir RICHARD LUCE, that the Association would be willing to establish or coöperate in the establishment of a panel of consultants in conformity with the principles of the scheme just adopted, arose, he said, out of the action of the Hospital Saving Association previously mentioned. The establishment of a panel in the metropolitan area was contemplated, but before it was formed an advisory meeting of consultants would be called to consider the details of the scheme.—The meeting supported this motion.

In moving the remainder of the annual report under hospitals, Sir RICHARD said that a position had been created by the Road Traffic Act, under which hospitals may claim from an insurance company an amount for the maintenance and treatment of injured third parties. The Council had issued in January a letter to the secretaries of medical staffs of hospitals, recommending the doctor attending to claim a fee from the hospital in these cases. The British Hospitals Association had been negotiating with insurance companies for a flat-rate payment, and had suggested that the Council should not press for the payment of the medical staff until these negotiations were concluded. The Council, however, had felt that it was not possible to depart from the terms of the January letter, and it was decided that the two Associations should join in inquiry into the future position of medical staffs of voluntary hospitals with regard to financial recognition of their service. During the past year, Sir Richard said, the committee had done everything in its power to further the acceptance of the revised hospital policy, and there was evidence that the principles of the policy were being steadily adopted.

A motion was introduced by Dr. D. F. TODD, for Sunderland, proposing that the Council should be asked to consider the question of opposing the establishment of closed panels of consultants and specialists, acting at reduced fees, to societies, and bodies, as being contrary to the ethics of the profession; the meeting supported him.

Commission for Introduction of Patients.

Dr. H. C. BRISTOWE (Bristol) brought forward a motion to state that it was undesirable that the Association, or any body under its control, should seek to obtain a commission from a practitioner for the introduction of a patient to any medical practitioner, whether that patient was to be attended in an institution or home, or simply as a private patient. He considered that no lists should be available of practitioners who were willing to pay a premium for patients, and claimed that a list of the kind existed.—Sir ROBERT BOLAM said that the list in question was published by a reputable body, and contained no mention of any practitioner's name. It consisted simply of information about accommodation for residential patients in various homes superintended by medical men, and was a simple trade arrangement for the convenience of any doctor who wished to place a patient in a residential home under medical supervision.—The meeting supported Sir Robert in his view that no question of ethics was here involved.

Mental Illness.

Dr. FOTHERGILL proposed that the Council should be instructed to endeavour to secure the acceptance of the principles affecting private practice in regard to mental illness. There was steady encroachment on private practice, he said, from several aspects. It was owing to the increase in the number of whole-time practitioners at antenatal clinics that the national maternity scheme of the Association had been drawn up and approved. Since the passing of the Mental Treatment Act the Board of Control had implied that it was impossible to treat mental illness on the same lines as physical illness. But a sick mind was not necessarily a diseased mind, and the general practitioner should know how to treat those of his patients who were mentally sick—indeed he was legally required to do so with his insured patients. The Board of Control had stated that the medical student had lamentably little opportunity of seeing mental illness, but this was not necessarily the case. Many universities required their students to attend a three months' course in mental disease. The recent appointments to the Board of Control were not such as to establish confidence in the ability of that body to judge this question. Twenty-three applicants for these appointments from the staffs of mental hospitals had been refused. The general practitioner was in a position to know the environment and characteristics of his patient, and to advise him how best to secure the mental rest which he needed. The Board of Control had suggested that all cases of mental sickness must be attended at clinics, which would mean that the general practitioner was robbed of his opportunities to acquire experience. The medical profession had been deprived very largely of midwifery and of the care of sick children, and was now in danger of losing the treatment of early mental cases. One of the principles in the treatment of the mentally sick was to keep all thought of an asylum out of the mind of the patient, yet the Board of Control advocated the care of these patients in villas built in the grounds of mental hospitals. He was earnestly opposed to such an idea, and urged the meeting to endeavour to retain the right of attending the mentally sick.

Dr. R. G. GORDON (Bath) admitted that many universities gave a three months' course in mental disease, but he asked whether the meeting would consider training in medicine or surgery adequate if it extended over three months without previous instruction in physiology or pathology. The medical student was given little or no instruction in the functioning of the mind. A preliminary training in psychology should be an essential part of a course in mental disease. He held no particular brief for the Board of Control, but it was a body designed to look after the interests of the patient and to see that he was not confined improperly in a mental hospital. The superintendent of a mental hospital, therefore, was not necessarily the best person to sit on such a board. There was no reason why clinics for mental treatment should be staffed by consultants; in his district the clinic was supervised by the superintendent of the mental hospital, attended by a second practitioner for the care of children and young people, and by a third for the care of adults. Not every general practitioner wished to treat mental cases, which were often extremely troublesome. He agreed with Dr. Fothergill that many mentally sick patients were better treated apart from mental hospitals, but he thought it unlikely that the Board of Control would try to herd them into institutions without regard to individual circumstances. It must be remembered, moreover, that there was considerable abuse of treatment of mental illness in small, privately run homes.

Dr. D. RICE (East Norfolk) spoke as the superintendent of a public mental hospital. Exception had been taken in some quarters to the recent appointments to the Board of Control, but the difficulty lay in the fact that the Treasury was not offering salaries which would be attractive to men of high standing in mental work. The three months' course in mental diseases which was attended by the medical student usually consisted of a series of lectures and demonstrations which were sufficient to rouse his interest, perhaps, but which barely touched the fringe of mental disease; not was there an opportunity of repeating the course during training. Under the Mental Treatment Act the patient admitted to a villa in the grounds of a mental hospital would have a better opportunity for recovery than he could hope for while living in a slum. Dr. Fothergill need not fear that the number of those who would be relegated to asylums would be increased; on the contrary, it was hoped that by extending out-patient treatment the actual number of admissions would be reduced. Attending the clinics there would be those patients who had improved sufficiently to leave the hospital, and whom it was hoped to discharge completely, and patients sent up by general practitioners for consultation. Until recently the mentally sick had been unable to obtain treatment unless they were rich enough to pay for care in expensive nursing homes; it was now hoped that early treatment would be available for every case, and that admission to a mental hospital would be avoided in many cases.

Dr. H. M. STRATFORD (Kensington) agreed with Dr. Fothergill that the best person to treat the mentally sick patient was the private practitioner. Common sense and sympathy were the most important components of the treatment, and the shadow of the mental hospital could not fail to do harm.

Dr. E. H. T. NASH moved that the whole question should be referred to the Council for investigation and report.—Dr. FOTHERGILL acquiesced in the proposal, and added that he was chiefly anxious that the private practitioner and the patient should be kept in touch with each other. At present the patient could attend a mental clinic without the knowledge of his doctor, which was most unsatisfactory. If it were true that the medical student received inadequate training in mental disease then the standard of instruction must be improved. The medical staff of the mental hospital should supply the consultant service for the general practitioner.

Dr. BRACKENBURY said that while it was true that the training of the medical student was bound to be incomplete in many respects, it was not true to say that those general practitioners who undertook the treatment of mental cases were not properly equipped for the task. The general practitioner was not a universal expert, but he knew when it was inadvisable for him to undertake treatment. Although there were instances where the care of mental cases had been shown to be inadequate, it was only in a few isolated cases that a medical man had been found to be responsible for the neglect. With regard to the Board of Control, the Council took no exception to the appointments, but only to the method by which they had been made. The Board had been approached and a suggestion offered that there should be a wider choice in future. It was agreed that the question should be referred to Council.

National Health Insurance.

A motion by Dr. W. D. WILLIAMS, for South West Wales, that a patient, referred to a regional medical officer by his doctor, should not be informed of the origin of his reference, was withdrawn upon the explanation by Dr. H. G. DAIN that under the present arrangements such information was not given.

Dr. STRATFORD (Kensington) moved that local divisions should, where necessary, appoint an insurance subcommittee, by way of stimulating interest.—Dr. DAIN supported the motion, which was carried.

Dr. STRATFORD also moved that all questions involving penalties should be removed from the punitive jurisdiction of the Ministry of Health, and should be decided by a medico-legal tribunal constituted for the purpose; failing the constitution of such a tribunal all decisions involving penalties inflicted by the Minister should be subject to an appeal to the High Court. This, he considered, was a vital principle which should have been insisted upon in 1912. At present the insurance practitioner was in the hands of a government department where the Minister of Health had primitive jurisdiction. There was no appeal from his decisions, and no opportunity for protest.

Dr. E. STUNGO (Lambeth) pointed out that the insurance committee provided an intermediary between the practitioner and the Minister of Health. In cases of offence by a practitioner the insurance committee was responsible for the formation of an adjudicating body, the medical service subcommittee, which gave the case an impartial hearing before passing on the conclusions reached to the insurance committee, who then made a recommendation to the Minister.

Dr. D. CLOW and Dr. D. ROXBURGH opposed the motion, and they were supported by Dr. DAIN, who said that the disciplinary mechanism had been considerably modified during the last three years and undertook to satisfy the Kensington division that it was just and effective.—Dr. STRATFORD withdrew the motion.

A further motion was proposed by Dr. STRATFORD, for Kensington, to the effect that in view of the charges concerning increased certification which have been levelled against insurance practitioners the Council should give expression to practitioners' opinions in this matter, including as the main causes: more sickness, unemployment, earlier recourse to doctor, and growing appreciation of the services and benefits available.

Dr. DAIN said that when the National Health Insurance Act was passed estimates were made on the expectation of sickness based on the extremely inadequate statistics of a men's sickness benefit society. During the war there appeared to be little sickness, because the country was engaged in a great united effort. Since the war sickness benefit had steadily increased, and there was a danger of the insurance funds becoming bankrupt. The blame had been thrown on the doctor, with a charge of careless certification, but the Council were satisfied that depressed economic conditions, a false initial estimate, and an improved standard of service were largely responsible for increased claims. Better diagnosis and more elaborate treatment meant better health in the end, but it also meant more sickness claims. The Council was engaged in considering what was almost a charge from the Government, and were preparing a statement in reply which they hoped to issue in October.

With the permission of the meeting Dr. STRATFORD agreed to refer this motion to the Council, and with it 27 other motions relating to insurance practice which appeared on the agenda paper in the name of Kensington.

Sweepstakes and Charities.

A vigorous discussion was aroused by the motion introduced by Dr. ERNEST WARD (Torquay) that complete discretion should be allowed to branches and divisions in regard to the methods they adopted to assist medical charities. Repeated appeals, Dr. Ward said, were made for medical charities, but results were disappointing. It might be desirable that every member of the Association should contribute half a guinea annually, but in actual practice appeals were a failure. At Torquay dances had been arranged and had yielded from £10 to £15, but when a sweepstake was organised the returns reached £650, out of which £400 had been contributed to the Royal Medical Benevolent Fund, £200 to the Epsom College Fund, and £50 to the divisional medical benevolent fund. The Council had expressed disapproval with this method of obtaining money when the sweepstake was half organised, and had, he estimated, lost £350 for charities by their action. Was a sweepstake, he asked, more immoral than a dance?—And added a quotation from Gibbon in which the moral aspect of dancing was very severely dealt with. All that his Division asked was a benevolent neutrality on the part of the Council, allowing independence of thought and action in the divisions and branches.

Dr. J. LIVINGSTON (Barrow-in-Furness) said that good results had been obtained in his area by interviewing all the practitioners and securing a banker's order for an annual subscription of a guinea.—Dr. C. E. S. FLEMMING thought that it was deplorable that the medical profession should have to resort to dances and sweepstakes to secure that provision for dependents which the working man made as a matter of course, either compulsorily or voluntarily. Sweepstakes gave the contributor a false sense of benevolence, and left him with the feeling that a five-shilling ticket could very well take the place of a guinea subscription.—The Rev. S. D. BHABHA (Greenwich and Deptford) considered that sweepstakes were immoral. He suggested that if every member of the Association who was a smoker set one cigarette aside a day, and bought it back again, the proceeds of the sales would amount to a handsome sum for charity in the year.—Dr. C. J. MARSH (West Dorset) said that following the instruction of his division he was bound to vote against a motion which he would prefer to support, but Dr. G. MACKIE (Shropshire and Mid-Wales) thought that the profession was in low water if it had to call upon outsiders to support its charities. He thought a round sum might be raised if each member gave up a week's golf annually.

Dr. BRACKENBURY put forward the attitude of the Council. They agreed that there should be no interference with the individual, but they thought that as long as there was either a majority or a strong minority who held that a certain method of raising funds was indefensible, the Association should not be officially responsible for the employment of that method, and should not be advertised by individual members as being so.

Dr. F. K. KERR mentioned a new association of medical practitioners which had been formed in Edinburgh, and which had, he said, arranged a system of group insurance; anyone under 25 who entered might have his life insured for £1000 at the rate of £10 a year.

Dr. W. F. DEARDEN (Manchester) considered that it was impolitic that the name of the Association

should be coupled with anything illegal, however universal, and Dr. D. CLOW (Gloucestershire) thought that sweepstakes raised in the name of the Association were not consonant with the dignity of the medical profession, or with that of a body intended primarily for the advancement of medical science.—Sir ROBERT BOLAM agreed that it was undesirable that the name of the Association should be used promiscuously, even though it aided medical charities. It was conceivable, he said, that Dr. Ward might find a market for an improved burglar's jemmy, stamped with the name of the Association, which might provide a lucrative source of funds for medical charities, but it would not be a wholly defensible action.—The meeting proceeded to the next business.

The same subject was raised by Dr. J. S. MANSON (Warrington) in connexion with the hospital policy of the Association. Sweepstakes, he said, were admitted to be the purest form of gambling. Viewed lightheartedly gambling was a flight—or flutter—from reality, but regarded more seriously it was a subtle and corrupt vice, a perversion of the normal instinct of adventure. He did not consider that it was dignified that the medical and nursing staff of a hospital should be remunerated from the leavings of a sweepstake.—Mr. BISHOP HARMAN pointed out that the promoters of sweepstakes were not afflicted by a sense of dignity, and thought it would not be satisfactory to introduce anything so imponderable into the hospital policy. He foresaw financial loss from the extension of this method of raising money; in Dublin some of the hospitals which had received large sums through the Irish sweepstake experienced the suspension of their regular contribution from the local authority.—On the suggestion of Dr. DAIN the meeting passed to the next business.

The Retiring Chairman.

A vote of thanks to the retiring chairman of the Representative Meeting, Dr. C. O. HAWTHORNE, was proposed by Dr. AGNES BENNETT and seconded by Dr. A. B. MURRAY. Dr. Hawthorne has completed his third year in the chair, which will be taken next year by Dr. E. K. LE FLEMING.

Annual General Meeting.

Prof. A. H. BURGESS relinquished the chair at the general meeting to Dr. W. G. WILLOUGHBY. Dr. W. HARVEY SMITH, the President, was unfortunately not able to be present. Dr. Willoughby introduced Lord DAWSON OF PENN as the President-elect for 1931–32. Lord DAWSON said that the Association was looking forward to welcoming members in London for the centenary meeting next year.

JOINT SECTIONS OF SURGERY AND MEDICINE.

At a joint meeting of the two sections, presided over successively by Dr. R. A. YOUNG and Mr. C. A. JOLL, Sir THOMAS HORDER opened a discussion on

Treatment of Septicæmia.

Sir Thomas Horder defined the subject for discussion as the general infection of the body by the common pyogenic organisms—the "streptococcal or staphylococcal fever" of Ryle—and included the patient with metastases, even though blood culture might be temporarily negative. He excluded the overflow of organisms into the blood stream in pneumonia and typhoid fever. The history of the former expectant treatment was reviewed, the attempts—mostly unsuccessful—to use antiseptics intravenously, the introduction of bactericidal sera, vaccines, sensitised vaccine, and immuno-transfusions with their disappointing results, and, finally, non-specific "shock" treatment, which is still on trial. Wise expectant measures, said Sir Thomas, are still our main standby. Treatment to be effective should be institutional, and comprises rest, fresh air, food, abundant water, sun (natural or artificial), eliminative measures for bowels and skin, alkalis and glucose to combat acidosis, hæmatinic drugs to control anæmia, nucleic acid and other leucocytic stimulants, hydrotherapy to control pyrexia, proper sleep, relief of pain by local and general means, and, above all, good nursing and a confident helpfulness from the doctor. Bactericidal serums, vaccines and immunogens had all been disappointing. Sensitised vaccines had been used, and also immuno-transfusion, but ten years of trial left them without much credit. Bacteriophages had been commercialised and were under consideration. The immunological factors between host and infecting organism were still generally undetermined. Antitoxic serum offered some hope. *Chemotherapy* had provided many failures and some disasters. Mercurochrome, despite its dangers, had some supporters. Some of the good results claimed from immunotransfusion might be due to the relief of the anæmia, to benefit derived from the donor's blood, or to a form of non-specific protein shock. Any form of non-specific treatment should probably be reserved for the later stages of the disease, and even then adopted with caution. Chemical shock with S.U.P. and other agents had been employed. There were so many things to do which involved no speculation, that this measure was best left to those who understood the teaching upon which the practice was based. The primary focus and later metastases should be searched for daily, and treated by aspiration for preference, or, if this were unsuccessful, by incision and drainage.

Sir Thomas Horder concluded with general advice. Study the individual case; mobilise expectant measures at the earliest possible moment; work in concert with the bacteriologist, but do not take his cue in regard to the programme of treatment; never put all the therapeutic eggs into one basket; steadily persist with the plan of campaign decided upon; avoid panic; do not flog the patient by too many treatments.

PROPHYLAXIS ASPECTS.

Sir WILLIAM WHEELER referred to the prevention of septicæmia by general surgical technique—e.g., excision and irrigation of severe war wounds. There were weak links in the chain, such as the nursing of septic and clean patients by the same nurse, and the possibility of hæmolytic infections from the throats of unmasked spectators. Serum, collosol, iodone, and salvarsan had been given intravenously but were not highly effective. He had no belief in mercurochrome or gentian violet. Injudicious early interference before a protective cellular barrier had formed round the infection might be highly dangerous. He had seen four patients die of septicæmia after unwise early incision into a septic lip, and death from a pimple on the face infected during shaving. In severe cases the continuous giving of glucose, up to 3 litres a day, given drop by drop into the tissue of the breast or into the saphenous vein, was of great value, as was also open-air treatment.

Prof. D. P. D. WILKIE deprecated premature interference with punctured wounds; if the hand was acutely septic with red lines in the arm, antistreptococcal serum should be given at once and Bier's bandage applied constantly with the pressure adjusted until it relieved pain. This treatment was

of value before much cellular change had occurred. He was absolutely sceptical of the value of vaccine, but thought sensitised vaccine might be of use. Glucose, given if necessary, subcutaneously or rectally, was valuable. A localised or "fixation" abscess was of good import. When improvement followed collosols there were always other factors to which one could attribute the success. Before operations on the lower bowel, immunisation with *coli* and staphylococcus vaccine three and ten days in advance, and nucleic acid the night before the operation, were of value.

STREPTOCOCCAL AND STAPHYLOCOCCAL ANTI-SERA.

Dr. R. A. O'BRIEN spoke on the utility and limitations of anti-sera, and offered an explanation why the reports of the use of antitoxic sera ranged from "enthusiastically favourable" to "no effect." Okell and Parish, from work with several thousand rabbits, had shown that while the toxin of the hæmolytic streptococcus, given intravenously, would kill rabbits, those given antitoxin withstood the toxin and remained in good health. With culture the story was different; living culture given intravenously also killed, and rabbits protected with 0·25 c.cm. of serum could stand the injection of culture without immediate harm, but if one kept them a fortnight metastases occurred and eventually most of them would die. Clearly then, said Dr. O'Brien, antitoxin protected against the toxin of all hæmolytic streptococci whether derived from scarlet fever, tonsillitis, puerperal fever, or erysipelas, but neither antitoxin nor "antibacterial" serum was effective against metastases. Therefore, antitoxin should be given at the earliest moment, intravenously, and in large doses to combat the early toxæmia of patients which often killed. Antitoxic serum against the staphylococcus had just become available. Its action apparently resembled that of streptococcal antitoxin, for it protected rabbits against a certainly lethal dose of toxin given intravenously; highly promising clinical results had been reported and further experience was desirable.

GENERAL DISCUSSION.

Mr. N. E. WATERFIELD had himself suffered from a septic infection of the finger. The same evening he was very ill and the finger was incised during the night and again next morning; the many incisions greatly relieved the pain. With antistreptococcal serum, abundant fluid and nursing out of doors, he made a good recovery.

Dr. R. KELSON FORD spoke of unrevealed bacteriæmia, a condition of equilibrium between host and microbe, the disturbance of which resulted in local infection—e.g., tuberculous joints. A woman patient in advanced pregnancy had knocked her knee against a bed; though the skin was unbroken, an inflamed lesion occurred below, and by aspiration a culture of hæmolytic streptococcus was obtained. This, he considered, was an instance of potential "idiopathic" puerperal sepsis. He gave vitamin A freely to pregnant patients; colloidal silver intravenously and milk intramuscularly had proved useful.

Dr. D. S. SUTHERLAND used streptococcal antitoxic serum in early puerperal sepsis, for he had had good results in toxic scarlet fever. He had an experience of several hundred cases of puerperal sepsis admitted late to hospital; for these cases he favoured L. Colebrook's mild arsenical treatment, the drug being given intramuscularly to provide slow absorption.

Colonel R. S. TOWNSEND had had complete failures with mercurochrome and acriflavine in India, where he had treated at least 50 cases. He favoured anti-streptococcal serum and, in early punctured wounds of the finger, Bier's treatment.

Dr. FLORENCE STONEY advocated zinc ionisation and diathermy.

Mr. G. H. STEELE protested against the curt dismissal of transfusion. He had seen dramatic improvement follow transfusion in a patient gravely ill with so many staphylococci in the blood that they were visible in smear and grew profusely in culture. In another patient with streptococcal blood infection from a septic bone in the leg secondary hæmorrhage had occurred. Improvement after transfusion was immediate.

Mr. R. V. HUDSON found abundant fluid, fruit juice, and vitamin A of value. During septicæmia, when effusion occurred into joints or pleura it was unwise to do more than aspirate at first. The fluid teemed with cocci and, therefore, he thought it wise to treat this collection as a "fixation abscess" and aspirate only. Bier's treatment was not always successful. At autopsy, following a witlow, he had found streptococci in the serous fluid of the chest and in the thrombosed vein of the arm which had been incised to the elbow.

Mr. C. A. JOLL pointed out the importance of keeping a clear judgment. The importunity of friends and the surgeon's own anxiety led him to use many treatments; the last one used got the credit if the patient recovered. He endorsed the value of Bier's treatment, and if he pricked his own finger applied a bandage at once. He had saved a patient desperately ill with osteomyelitis by amputation. Transfusion he found of great value, sometimes alternated daily with blood-letting. Glucose in 10 per cent. solution, and insulin if necessary, was of value.

Dr. R. A. YOUNG reviewed the discussion. He considered that the laboratory worker had the future of this condition in his hands; he must try to find why some cases of septicæmia died in a few hours, others lasting weeks or months; these variations might be related to the peculiar strains of organism present or to the different response of different patients. He feared too early opening of infected fingers, and had seen death follow injudicious extraction of teeth, particularly from elderly people. In 1918, during the influenza outbreak, he had always begun to hope, even in a desperate pneumonia, when he saw an empyema develop; so in septicæmia he felt more hopeful when a fixation abscess occurred. He would aspirate rather than drain. He had a horror of even small pustules on the upper lip, and had seen disaster follow such infections.

REPLY.

Sir THOMAS HORDER agreed with the very early use of serum in liberal dosage. He had seen Bier's treatment relieve the pain in punctured wounds. Morphia also helped in the early stages. Many years ago, during an autopsy on a patient dead from infection with hæmolytic streptococcus, he himself thought he had pricked his finger but could find no hole in the glove, even after filling it with water. Next morning the finger throbbed and he was feverish. By the evening the pain was intense and lymphangeitis was present in the arm. He was relieved when his senior surgical colleague incised the lesion. After many painful surgical procedures he recovered, but the finger was still somewhat crippled. He noted that the serum of which Dr. O'Brien had spoken was antitoxic and could be proved in the laboratory to have a protective action which was lacking in the older antibacterial serum. Transfusion certainly

helped to combat anæmia. The good effects which had been recorded might be due to some unknown form of "protein shock." The final conclusion was that one must be wise in general judgment, neglect no useful measure, and be alert to find foci.

SECTION OF PATHOLOGY.

AT the meeting of this section held on July 22nd the chair was taken by the President, Prof. E. P. CATHCART, and Dr. E. F. HOARE opened a discussion on

General Practitioners and Coroners' Post-mortems.

He submitted that the work of coroners' post-mortems was peculiarly work for a skilled and trained pathologist, and that many practitioners did not like having to do it. Even those who were eager for the work had very few chances to gain experience. He declared that the legal fiction of the equality of all practitioners applied only to their legal status and their potential abilities. Their particular superiority in any branch depended on opportunity and experience. The legal aspect and intricacies of the Workmen's Compensation Act and general insurance required constant practice if they were to be fully grasped. In the High Court pathologists were more likely to be regarded as experts and their opinions accepted as "evidence." The whole subject, he said, involved a number of complexes, lay and medical. The public held very varying attitudes towards the post-mortem examination, but the medical complexes surpassed all others in complexity. They were composed of self-interest, high ethical considerations, etiquette, illogicalness, stupidity even, combined with intelligence, decent feeling, and practical common sense; the whole producing in their legal brethren's minds the kaleidoscopic effect of being hit on the back of the head by a charabanc. The coroners' complex had, Dr. Hoare thought, been exaggerated. Doctors were often touchy about trifles, and did not realise that coroners were more often than not their best friends. More doctors ought to qualify for coronerships; the coroner's office was tending more and more to be a medical affair. The extended powers under the Coroners Act, 1926, threw a great responsibility on the coroner. He relied entirely upon the post-mortem report, which was not evidence on oath, and which must therefore be absolutely accurate, informing, and reliable in every detail. A coroner's post-mortem examination was not only held to ascertain the cause of death; the coroner was much more interested in how the deceased came by his death. The cause and the "manner how" were co-related, but were not one and the same thing. Many minor points might indicate the "manner how," as well as affording evidence of identification and of crime. The handling and correct interpretation of morbid changes, and the actual performance of the post mortem in a way satisfactory to the demands of the community, could only be acquired by special training and retained by constant practice. There were not enough cases for everybody to have this practice, and the efficiency of the work would be increased, and the public would be better served, by transferring this branch of medicine to pathologists.

A communication was read from Dr. G. ROCHE LYNCH. He agreed that the conduct of the autopsy and the proper interpretation of results could only be satisfactorily achieved by those who had made pathology their special study, and that accurate and reliable evidence was essential if justice were to be administered. The general practitioner would suffer no deprivation, because the demonstration of a case by a competent pathologist was of much greater value to him than actually performing the post-mortem. The employment of specialists had come to stay.

CASES OF POISONING.

In cases where death was due to some poisonous or noxious substance the material would usually be sent to a public analyst or specialist. The employment of a non-medical analyst seriously embarrassed the work of highly skilled men. The average practitioner might see one case of criminal poisoning or drug abortion in a lifetime. The post-mortem might fail to reveal the cause of death on account of faulty observation or on account of the need for bacteriological, microscopic, or chemical examination. This class of case must be dealt with by the expert pathologist. During the autopsy evidence of poisoning might be found, and here often the medical man was in a difficulty. Only persons of experience could properly reserve material for examination; the inexperienced sometimes made ludicrous mistakes which could have serious consequences. Cases of industrial poisoning might present even greater difficulties; important questions depended on the opinion of the pathologist. For the advancement of toxicology it was essential to have plenty of material for investigation and accurate observation and inference.

Dr. H. W. WEBBER opposed the proposal to centralise post-mortem work. He thought that indolence played a large part in the attitude of the practitioner towards this problem. A general practitioner worthy of the name would undertake all branches of practice, calling on the specialist only for difficult cases. If he had not sufficient knowledge for the work he should set to and acquire it. Post-mortem examinations were the foundation of sound diagnosis. He suggested that a mortuary be established in every city and large area, so that relatives might be spared the unpleasantness of having an autopsy in a private house.

Dr. A. J. HAWES said that, although a general practitioner, he held the view that most general practitioners should not do post-mortems. He declared that they could not do them properly, and could not be expected to do them properly. He regarded the outcry of "more work taken away from the general practitioner" as foolish. If the proper person to do a certain task was a specialist, then the general practitioner ought to cease doing it. The only justification for the general practitioner's existence was that he could do many things as well as other people; an autopsy was not one of those things. The speaker had no sympathy, he said, for the "poor old general practitioner" school of thought. It was true that specialism had captured some of the general practitioner's work, but every advance in knowledge had opened up rich new pastures for him. The general practitioner was shifting ground, not losing it. He had not the special education or the necessary opportunity to become sufficiently experienced in pathology to do this work really well. In every other branch of medicine constant practice was considered indispensable, but the average practitioner only did two or three post-mortems a year. A man who opened a cadaver was in much the same position as the surgeon who opened an abdomen; he ought to be able to deal competently with anything he found inside—easy or difficult. The suggestion that the practitioner should do the work and call in the pathologist when he got into difficulties was not likely to be very welcome to

the pathologist. While most general practitioners should not do autopsies, some of them should—preferably younger men who liked the work, in small towns and rural areas where there were no pathologists. Another long-overdue reform was that there should always be an assistant doctor at post mortems, just as there was an assistant surgeon at operations. In country districts it was no light task to find the necessary help. The junior could thus learn the work, as well as being of great assistance to the senior.

Colonel H. A. SMITH considered that the medical curriculum only fitted a man for the merest preliminaries. It was more important that the general practitioner should be certain of ante-mortem conditions than that he should be able to perform autopsies. The district medical officer in India had to do many post-mortems, and often to face strict cross-examination. A medical witness who gave a straight, honest answer and knew his job would not, however, encounter much trouble with a lawyer.

THE NEED FOR A SPECIALIST.

Prof. A. MURRAY DRENNAN agreed with Dr. Hoare's conclusions, and said that in his experience practitioners did not want post-mortem work. An autopsy might be a very difficult investigation involving pathological, chemical or histological work, and the life or liberty of an individual might depend on the result. Very important details could easily be overlooked by a doctor who was out of touch with such special points. Even the pathologist needed special experience of medico-legal work. Any medical practitioner could do a post-mortem, but he could only be an expert after special study and long experience.

Dr. P. G. STEPHENSON DAVIS pleaded that, as a general practitioner was often unable to leave his work to attend a post-mortem, he should as of right be given a fairly full report on the examination of any patient of his who came to autopsy. The coroner in his district—a large London division—had agreed, as an experiment, to answer questions on the cause of death. This, however, was not sufficient.

Dr. W. G. BARNARD maintained that personal attendance was the best solution, and that a report was not a good substitute. No London coroner or pathologist would have the slightest objection to the presence of the general practitioner at the post mortem. The last speaker did not realise how much the pathologist had to do for his two guineas.

Dr. DAVIS suggested that the practitioner might have a carbon copy of the pathologist's report.

Dr. BARNARD, continuing, agreed that something of the kind might be done. He considered it dangerous for the general practitioner to carry out a post mortem; often the most important part of the operation was the taking out of the organs, the appearances when they were taken out, and the condition of affairs in situ. An unpractised man might destroy all the evidence and be unable to say, for example, whether the clot was ante-mortem or post-mortem. A medico-legal institute was badly needed in this country.

Dr. A. G. SHERA stressed the importance of an accurate history and of the presence of a clinician if possible. The general practitioner ought to receive a fee for supplying an accurate clinical history or for attendance—which might usefully be made compulsory—at the post-mortem.

Dr. H. W. C. VINES testified as an examiner that few qualified practitioners could write a post-mortem report. He taught students to open and close the body as well as to examine; the reason why many general practitioners did not like post-mortems was their inability to deal tidily with the body. It was very difficult for a student to do more than two post-mortems during his clerkship.

Dr. A. H. HUNT mentioned the trials of medical officers in India who were always expected to state the cause of death. Statistics showing the average proportion of cases in which the cause of death was not apparent would enable them to avoid undeserved blame.

Dr. C. W. CUNNINGTON pleaded for coöperation between the general practitioner and the pathologist.

Dr. HOARE replied.

REVIEWS AND NOTICES OF BOOKS

Gastric Acidity.

A Historical and Experimental Study. By J. D. ROBERTSON, M.D., Assistant Chemical Pathologist to the Middlesex Hospital. London: Published for the Middlesex Hospital Press by John Murray. 1931. Pp. 76. 5*s*.

THIS monograph contains a scholarly review of the history of gastric analysis and observations on gastric secretion, from the work of van Helmont in the sixteenth century down to the present day. If it be remarked that some very notable observations, such as those of Carlson, have been omitted, it must be noted, on the other side, that a large amount of important experimental work which is usually overlooked, such as that of Spallanzani and Réaumur, is here brought out in its true perspective. Perhaps the chief object of Dr. Robertson's monograph is to demonstrate the significance of the occurrence of lactic acid in the gastric contents, and particularly the diagnostic value of the presence of this substance in cases of suspected carcinoma of the stomach. Much has been written on this subject, and many observations have been based on insufficient evidence, and without the necessary foundation of knowledge of previous experiment, so that Dr. Robertson's critical book should be of value alike to pathologists and clinicians who are interested in gastric analysis.

Dr. Robertson is definitely opposed to the view that lactic acid is produced specifically in carcinoma of the stomach. In a series of experiments, so thorough as to leave little doubt as to their conclusiveness, he finds that whereas lactic acid is usually present in carcinoma of the stomach, it is not an early sign; when this acid makes its appearance, the growth is usually too advanced to be amenable to therapeutic measures. He is convinced that lactic acid is valueless for the purpose of making an exact or quantitative interpretation. The production of this valuable monograph at the low price of 5*s*. does credit to the Middlesex Hospital Press.

The Chemical Activities of Micro-organisms.

By A. J. KLUYVER, Professor of Microbiology, Technische Hoogeschool, Delft. University of London Press, Ltd. 1931. Pp. 109. 4*s*. 6*d*.

WE welcome the appearance in book form of the lectures given by Dr. Kluyver in London in May, 1930. These lectures, which were greatly appreciated by all who were privileged to hear them, have now

been collected into a small volume together with many tables and diagrams, and an excellent list of references. The first lecture deals with alcoholic fermentation, and Dr. Kluyver shows how this apparently amazing process can be reduced to a chain of primary reactions. In his second lecture he goes on to consider other physiologically equivalent fermentation processes, and in the third lecture gives a clear and interesting account of oxido-reduction processes. This is a valuable book.

The Principles and Practice of Perimetry.

Third edition. By LUTHER C. PETER, M.D., &c., Professor of Ophthalmology in the Graduate School of the University of Pennsylvania, &c. Philadelphia: Lea and Febiger. 1931. Pp. 315. With 194 engravings and five coloured plates. $4.50.

THE importance of perimetry, both in ophthalmology and in neurology, has been increased of late years. Dr. Peter points out that visual acuity in different areas of the field varies not only qualitatively (different areas for different colours), but quantitatively, according to the strength of the stimulus. Ferree and Rand, whose perimeter is specially adapted for scientific work of this kind, have shown that if the intensity of the red and blue stimuli is properly increased, these colours may be recognised as far in the periphery as a white stimulus, whereas green falls far short of the red and blue limits, even if the highest intensity is used. For the peripheral fields the perimeter—consisting of the arc of a circle, so arranged as to secure ease in central fixation, adequate illumination, and contrast of the test object with the surrounding field—is well adapted, but McHardy's model, which used to be the most popular, is adversely criticised by the author. He prefers his own or the Lister model, but maintains that for accurate work there is nothing to compare with that of Ferree and Rand. The central parts of the field—central and paracentral scotomata—can be tested more satisfactorily by Bjerrum's screen, or some similar tangent screen, at one or two metres, since the scale on which the observations are taken is larger. Even a small-distance scotometer such as Bishop Harman's, in which the test object is only 33 cm. from the eye, gives better results for central scotomata or enlargement of the blind spot than McHardy's perimeter, since the mechanical registration in the latter necessarily reduces the scale of the chart. Mechanical registration nowadays is not looked upon with favour, for this and other reasons, but though it involves more trouble for the surgeon who is taking the test it also has the advantage that it cheapens considerably the cost of the instrument. In these instruments there is no mechanism for moving the test object, which is moved by the surgeon's hand in whatever direction he likes. In the realm of pure ophthalmology, perimetry is chiefly employed in such diseases as glaucoma, retinitis pigmentosa, arterial obstruction, retrobulbar neuritis, toxic amblyopia, and optic atrophy. For the neurologist the limitation of the visual field is an essential part of the diagnosis in the localisation of cerebral affections which involve the visual path. In these various connexions this book will be of great service. Quite half of it is concerned with the special pathology of fields resulting from affections of the nerve head, the optic nerve proper, the chiasm, and the posterior part of the visual pathway, including the optic radiations and the visual centres in the occipital lobes.

Modern Treatment of Nasal Catarrh.

By A. LOWNDES YATES, M.D. Lond., F.R.C.S. Edin., Assistant Surgeon, Ear and Throat Department, Prince of Wales's Hospital; Assistant Surgeon, Central London Throat, Nose and Ear Hospital. Modern Treatment Series. General editor: F. G. CROOKSHANK, M.D., F.R.C.P. London: Jonathan Cape, Ltd. 1931. Pp. 160. 5s.

IN this little book Mr. Lowndes Yates describes the course of inflammatory processes within the nose and nasal accessory sinuses, and the reactions of the tissues of these regions to infection. He takes rather novel and unorthodox views of some of these processes, and expresses them dogmatically. Thus he states emphatically that ciliary action is the only method by which the sinuses can empty themselves of secretion, and allows nothing to drainage by gravity or to the currents of air across the ostia produced by blowing the nose. Ciliary action is doubtless of great importance when the mucosa is coated by secretion, but, in a cavity of the shape and size of the maxillary antrum, full or half-full of fluid, it is hardly conceivable that the action of the cilia is sufficiently powerful to lift this bulk of fluid to the ostium. Mr. Lowndes Yates considers it wrong to make a wide permanent opening in the inferior meatus to drain a chronically suppurating antrum, a conclusion which is at variance with the general experience, but relies on frequent syringing by repeated tapping or through a small opening made for the introduction of a cannula. This small opening was in vogue in the early days of rhinology, and was abandoned as unsatisfactory in chronic cases, for it was found that suppuration often recurred after the opening had closed. Mr. Lowndes Yates adopts a rather hopeless attitude towards cases of toxin absorption from a focus of infection in the nose; in his opinion operation should be ruled out in these cases, since they become worse instead of better when extra trauma is added to the existing state of inflammation. There is much value in his insistence on the importance of the function of the cilia, and on the necessity of conserving this as far as possible in all operations on the nose. The book is one of a series intended especially for the general practitioner, but it will be of more interest to rhinologists, to whose thoughts on old problems it may give new direction. It is more concerned with ætiology and diagnosis than with treatment. There is a bibliography at the end of each chapter, the usefulness of which would have been enhanced by references in the text.

Clinical Electrocardiography.

Fifth edition. By Sir THOMAS LEWIS, M.D., F.R.S., D.Sc., F.R.C.P., C.B.E., Physician on the Staff of the Medical Research Council; Physician in charge of Department of Clinical Research, University College Hospital. London: Shaw and Sons, Ltd. 1931. Pp. 128.

THAT there is a continued demand for Sir Thomas Lewis's small book on electrocardiography is shown by the appearance of a fifth edition only three years after its predecessor. The demand is not surprising, for electrocardiography has now an established place in the diagnosis of heart disease and all are expected to be familiar with the ground-work of the subject. This book supplies the information required in an extremely attractive form. A new diagram has been

introduced to illustrate the present physiological conception of the electrocardiogram as a record of the changes of electrical potential produced in a fluid medium surrounding an active muscle. The figure of the levogram and dextrogram on p. 26 has been simplified, and a new illustration of a paroxysm of ventricular tachycardia appears in Chapter VI. In other respects the present edition is very similar to the last.

Physical Diagnosis.

Tenth edition. By RICHARD C. CABOT, M.D., Professor of Clinical Medicine in Harvard University. London: Baillière, Tindall and Cox. Pp. 529. 25*s*.

Dr. Cabot's well-known book on Physical Diagnosis, covers a far wider field than the title would lead one to expect. It contains a wealth of pathological information and continually stimulates the spirit of inquiry by drawing attention to physical signs the significance of which is at the present time obscure. The author refers, for example, to diastolic murmurs maximal at the fourth left costo-sternal junction. These are generally believed to be due to aortic incompetence, but in some of his cases which came to autopsy no lesion of the aortic valve was found. It is perhaps a mistake to include in a book such as this conclusions based on purely circumstantial evidence, as for example the statement on p. 97, that "if the peripheral blood pressure is permanently high, it is well to conclude that the heart is enlarged, whatever the other physical signs." Although it may be admitted that these two findings are frequently associated, it is surely wrong to teach the student to diagnose cardiac enlargement on such grounds. On the other hand Dr. Cabot's method of correcting many erroneous beliefs by correlating the physical signs with the post-mortem findings deserves the highest praise.

The book is copiously illustrated with clinical photographs, graphic records, and diagrams. One pulse tracing on p. 228 appears to have been reproduced upside down, but for the most part the illustrations are lucid and well chosen.

Protozoan Parasitism of the Alimentary Tract.

By KENNETH M. LYNCH, M.D., Professor of Pathology, Medical College of the State of South Caroline, Charleston, South Carolina. London: Macmillan and Co., Ltd. Pp. xvii.+258. 16*s*.

THIS little book describes clearly and accurately all the important facts concerning the intestinal protozoa of man. The author's object in writing it is to help the practising physician and the laboratory worker to understand the true relationship between these parasites and their host, and so to save them from drawing unwarranted conclusions as to their pathogenicity. The mere finding of one of these organisms is not an indication that the patient requires drastic treatment. The majority of the intestinal protozoa are not pathogenic; hence it is important to distinguish without doubt the highly pathogenic *Entamœba histolytica*. Methods of examination for these organisms are detailed and their distinguishing features are fully dealt with, while the errors which can be made and the means of avoiding them are explained. The life-history of each as far as it is known, and the methods of infection and prophylaxis, receive adequate treatment. The symptomatology and pathology of infections with *Entamœba histolytica* and *Balantidium coli* are clearly discussed, as also the latest methods of treatment. The author's long experience as a practising physician and laboratory worker has enabled him to produce an excellent manual. All those who are liable to encounter these infections in the patients they are treating or in material sent to them for examination should study it. The book is written in an easy style, is well printed, and has good illustrations.

Clinical Dietetics.

A Text-book for Physicians, Students and Dietitians. By HENRY GAUSS, M.S., M.D., F.A.C.P., Instructor of Medicine, University of Colorado School of Medicine. Assisted by E. V. GAUSS, B.A., formerly Assistant Dietitian, Presbytery Hospital, Denver, Colorado. London: Henry Kimpton. 1931. Pp. 490. 36*s*.

THIS volume is dedicated to the memory of Dr. B. W. Sippy, and British readers will appreciate a tribute to the memory of one whose work has been of signal service to thousands of patients on this side of the world. The book should be more useful to workers in this country than most American books on dietetics, since the difference between the foodstuffs discussed and the British dietary is less noticeable than usual. It is true that the diets given, including substances like meat loaf, farina, and wholewheat muffins, are often inapplicable to British patients, but, on the other hand, much of the information will be valuable to clinicians on both sides of the Atlantic.

The diets are usually given in three forms—first in the form useful for practitioners, secondly, as a week's menu suitable for the guidance of hospital dietitians, and, lastly, in a manner comprehensible to the patient himself. The volume is admirably prepared, its arrangement is logical, and displays a scientific breadth of view.

Hæmorrhoids: the Injection Treatment and Pruritus Ani.

Second edition. By LAWRENCE GOLDBACHER, M.D. Philadelphia: F. A. Davis Co. 1931. Pp. 207. $3.50.

Dr. Goldbacher's volume on hæmorrhoids and pruritus ani, first published last year, has now reached a second edition. In this book the pathology and treatment of hæmorrhoids are set out clearly, the author favouring especially the use of 5 per cent. phenol in cotton-seed oil for injection of internal piles by the Albright technique. The importance of careful selection of the site for inserting the needle and of slow injection of the fluid is stressed. The author believes in giving large doses of the injection fluid, and reports that he has given as much as 20 c.cm. at one sitting, divided into two injections of 10 c.cm. The treatment of pruritus ani by the subcutaneous, peri-anal injection of the 5 per cent. solution of phenol in oil is described; the author remains convinced of the value of the method, and reports that in his experience no abscess formation or complication of any kind has occurred after the injections. The table of 17 cases treated by this method and the detailed description of 10 cases at the end of the book are unchanged from the first edition. Since this method of treatment has not, so far as we know, been very generally adopted or reported on, it would seem desirable to bring the case reports up to date.

THE LANCET.

LONDON: SATURDAY, AUGUST 1, 1931.

THE LONDON VOLUNTARY HOSPITALS.

THE economic unsettlement of the past few years has aroused many fears about the future of institutions which depend for half their aggregate revenues upon private benevolence, mainly in the form of voluntary contributions. King Edward's Hospital Fund for London has therefore done a service of real value by issuing a pamphlet, "Some Facts about the London Hospitals Assisted by the King's Fund," setting out the progress of the metropolitan hospital service between 1925 and 1929 with a glance at 1930. The statement shows that even in 1930 the total income was still ahead of the total expenditure and, indeed, slightly increased its lead, and that there was no fall in the sum of voluntary gifts. On the other hand individual were not so good as aggregate results. As the PRINCE OF WALES pointed out in his speech at the recent annual meeting of the King's Fund, in 1929, there were 18 more surpluses than deficits on the year's working, whereas last year there were an almost equal number of surpluses and deficits. This implies not that the voluntary hospitals have weakened in public favour, but that they are feeling the consequences of a financial upheaval which is affecting every business enterprise and every charitable effort all over the world. At the same time it has to be recognised that hospitals, whose expenditure must necessarily grow with the ever-widening cost of their work and equipment and the rapidly increasing tendency of patients to turn to them, can of all institutions least afford to face anything in the nature of a financial crisis.

Of late years the responsibilities of the voluntary hospitals in the metropolitan area—an area which, not long ago, was substantially enlarged—have grown with great rapidity. Since 1925 beds have been added to the number of 1807, raising the total to 16,117. In this period in-patients have mounted from 196,000 to 234,000, and every year they will mount still higher. The coincident increase in out-patients and their attendances is notorious, and, all things considered, it is somewhat surprising that the total annual outgoings of the 138 hospitals in question have expanded by no more than a fraction over half a million. In 1929 there was a total income of £3,600,000 to meet a total expenditure of £3,550,000. That was not a year of abounding public prosperity; this resiliency of income was therefore the more encouraging. A few of the older hospitals have substantial endowments, but, taken altogether, investments produce no more than 17 per cent. of the total expenditure. A further 34 per cent. was produced by payment for services rendered, leaving 49 per cent., almost exactly one half, to be found from voluntary contributions. Yet, notwithstanding this heavy draft upon public benevolence, the £3,600,000 of current income in 1929 by no means represents the whole amount raised. For building and equipment the further handsome total of £865,000 was given voluntarily and an additional £220,000 came in for investment. This, of course, is the most desirable, because the most permanent, form of help. Thus the total hospital revenue of 1929—the 1930 details are not yet available—reached the large figure of £4,685,000, of which £2,845,000 took the form of voluntary contributions.

So much for the past. What of the immediate future? Can we reasonably expect, at a time of unexampled industrial depression, that the London hospitals will continue to face their heavy task with a comparatively light heart? The beginning of an answer is supplied by the significant remark in the Report of the Pay Beds Committee of the King's Fund three years ago that "the voluntary hospital system is already becoming largely a coöperative effort in which all classes of the community, including the hospital patients themselves, combine as their means permit to promote hospital services which produce benefits for all classes." This is equivalent to an admission that the voluntary hospitals are losing some of their original charitable character. The extent to which they are losing it is suggested by the fact that there are now 1425 pay-beds in 99 metropolitan hospitals of the most varied character, where patients pay from two guineas a week upwards—charges which may or may not include medical and surgical fees. The most recent hospital to acquire paying beds is the Royal Northern, whose new wing opened on July 28th contains accommodation for 55 patients in single and 10 in double rooms. The charge made varies from six to ten guineas a week for single rooms and five guineas a week for double rooms, professional fees not being included. The pay-bed system is in its infancy; the time is coming when almost every hospital will have adopted it, with results as happy to their finances as to the health of their patients. Another way in which the patient is brought in to help painlessly to himself is by the contributory scheme. London already has by far the largest of these schemes, which are now very numerous all over the country. The progress of its Hospital Saving Association has been astonishing. Its 651,000 members in 1929 were far more than tenfold its strength in 1924, and it has obviously by no means exhausted the material upon which it can draw. Moreover, patients not covered by any form of contributory scheme are learning, in increasing numbers, that they owe a debt to the institution which has brought them back to health which cannot be liquidated by a mere "Thank you." Here, then, are some immediate and important expectations of enhanced revenue, expectations which, in the nature of things, can hardly be belied. Nor is there real reason to fear that the elasticity which has been so remarkable a feature of the last few years will suffer any serious diminution in the near future.

THE TREATMENT OF SEPTICÆMIA.

THOSE responsible for the choice of a programme at the Eastbourne Meeting of the British Medical Association did well to decide upon a joint discussion on the treatment of septicæmia. Contributors to the discussion were wise enough to limit their remarks to those general infections of the body caused by the streptococcus and the staphylococcus. Sir THOMAS HORDER reviewed the unsuccessful attempts to use antiseptics intravenously, also treatment by sera, vaccines, immuno-transfusion, and finally non-specific "shock" treatment. He pointed out that treatment to be effective should be institutional, and comprises rest, fresh air, food, abundant water and glucose, sun, hydrotherapy, proper sleep, relief from pain, and above all, good nursing. The primary focus and later metastases should be searched for daily, and treated by aspiration or drainage. Many speakers brought out useful points concerning the preventive aspects of septicæmia. Sir WILLIAM WHEELER referred to excision and irrigation of severe war wounds and to weak links in the chain of aseptic technique. He stated his conviction that injudicious early interference, especially with a punctured wound before a protective cellular barrier had formed around it, may be highly dangerous. He had seen four patients die of septicæmia after unwise early incisions of boils round the lips.

Dr. R. A. YOUNG, who presided, feared too early opening of infected fingers, and had seen death follow injudicious extraction of teeth, particularly in elderly people. His horror of even small pustules on the upper lip was well founded, for he had seen disaster follow such infections. Prof. D. P. D. WILKIE has used vaccine treatment as a preventive of septicæmia before operation for excision of the rectum. He attempts immunisation with *coli* and staphylococcus vaccine three and ten days in advance, and gives nucleic acid the night before the operation to stimulate leucocytosis. He uttered a warning against the deep-seated metastatic abscess which often occurs with little or no pain. He deprecated premature interference with punctured wounds and stated his view that if a hand was acutely septic and showed lymphangitis antistreptococcal serum should be given at once and Bier's bandage applied constantly with the pressure adjusted until pain was relieved. Mr. C. A. JOLL and Colonel R. S. TOWNSEND endorsed the value of Bier's treatment, but in Mr. R. V. HUDSON'S experience it is by no means always successful. Many speakers spoke highly of the results of blood transfusion, but no particular advantage was claimed for immuno-transfusion. Many experiences of complete failure with mercurochrome and acriflavine were recorded. It was rarely made clear by speakers whether the sera which were claimed to have good effect if used early and in large doses were antibacterial or antitoxic sera. It is doubful whether the audience was clear about the difference between an antibacterial serum produced by the inoculation of an animal with the streptococcus itself and an antitoxic serum produced by the inoculation of the animal with the toxin filtered off from a culture of streptococci. Sir THOMAS HORDER did state definitely that both antibacterial and antitoxic sera had been advocated in the treatment of septicæmia and that the latter offered some hope. Dr. YOUNG, reviewing the discussion, wisely left the future of the treatment of septicæmia in the hands of the laboratory worker whose task it is to explore the reasons for the remarkable variations in reaction to infections.

Dr. R. A. O'BRIEN made an illuminating contribution to the laboratory aspect of the subject. He emphasised the desirability of the early use of concentrated scarlet fever antitoxin, since it protects against the toxin of all hæmolytic streptococci, whether derived from scarlet fever, tonsillitis, puerperal fever, or erysipelas. In his view patients might be saved from the early toxæmia of septicæmia by giving this antitoxin intravenously in large doses at the earliest possible moment. He struck a further hopeful note in his statement that antitoxic serum against the staphylococcus had just become available. C. C. OKELL and H. J. PARISH had shown, he said, from the use of several thousand rabbits, that while the toxin of the hæmolytic streptococcus, given intravenously, would kill these animals, those given antitoxin withstood the toxin and remained in good health. Living culture given intravenously also killed rabbits, but animals protected with 0·25 c.cm. of serum could stand the injection of culture without immediate harm, though if they were kept a fortnight metastases occurred, and eventually most of them would die. His statement that neither antitoxin nor antibacterial serum was effective against metastases is the probable explanation why reports on the effects of sera range from the most enthusiastic to the most pessimistic.

The stories of personal experiences were entertaining. Two speakers praised the early use of serum, and agreed that surgical incision was welcome from the great relief of pain which it brought. It was also interesting to hear how PFANNENSTIEL, operating upon a pyosalpinx, punctured his finger, developed lymphangitis, rigors, and delirium, and died in spite of the ministrations of BIER. The fact that PAGET gave morphia a high place in the treatment of his own septicæmia was also illuminating; but must we subsist on impressions and reminiscences? Where are the facts and the figures? Surely our great hospitals can arrange investigations by which the effects of blood transfusion in septicæmia can be appraised statistically. Cannot Bier's hyperæmia for punctured wounds of the finger be put to the test in a given series of cases with controls? Is nobody yet prepared to give figures as to the effect of vitamin A in a long series of cases of septicæmia? Why is it not possible for controlled investigations to be carried out on the relative values of antitoxic and antibacterial sera? Concentrated scarlet fever antitoxin has now been available for many years, and the work of OKELL and PARISH was published as long ago as 1927. We are proud of our medical

schools and the methods by which they turn out experienced clinicians, but the next step to progress is surely the endowment of definite lines of research in our great hospitals. We look forward to getting results from such centres as the newly endowed wards and laboratories of Queen Charlotte's Hospital, which should replace haphazard impressions with definite facts.

MATTER.

WE are all now thoroughly accustomed to the revolutionary ideas about the live world of animals and plants which matured during the first half of the nineteenth century, and found popular and convincing expression in the "Origin of Species." Man's place in nature is now recognised everywhere as something quite different from the conception of 100 years ago. LYELL'S argument that the surface of the dead world on which he moves has been moulded to its visible form by slow evolutionary processes has also met with such general acceptance as to be a commonplace. It is difficult indeed for us to look at the world about us with other than evolutionary eyes. But of matter itself no one until recently had any doubts; the substance of the universe might change, might go through many combinations and dissociations, might present entirely different appearances at one time and another, but everyone believed that it was essentially permanent, incapable either of annihilation or creation. It seems now that this too is in doubt, as Sir JAMES JEANS sets out with his accustomed clarity in a supplement to *Nature* of July 18th.

According to modern conceptions an atom of a chemical element consists of one or more electrons revolving rapidly round a nucleus consisting of one or more protons. The fall of an electron towards the nucleus results in the emission of radiation, and such a degradation of electronic orbits with the resultant annihilation of the atoms involved might be a tremendous source of energy. There have been many speculations as to the precise source of the energy represented by the light and heat coming from the sun and stars. Sir JAMES argues that nothing but the annihilation of matter can account for so much energy coming for such a long time from such relatively small bodies. The difficulty is to account not so much for the intensity of the radiation as for its duration, and astronomical considerations almost all converge to the conclusion that the stars in general have already lived through millions and millions of years. Great interest has been aroused of late by the discovery of the highly penetrating cosmic radiations which reach the earth from space and apparently have no immediate connexion with the stars as they exist. These radiations have just the characters which would result from the annihilation of matter. Produced at extremely high temperatures in the interior of stars this radiation would be continually softened in its passage outwards to free space and would finally emerge in the familiar form of starlight. Produced in the surface layers of stars at lower temperatures or in unattached atoms and molecules in free space, it would reach us largely in its original form as cosmic radiation. These radiations, too, are absorbed with such difficulty that they are relatively indestructible; calculations which we can admire without understanding them show that they would still exist in abundance if they had been produced only in the early years of the existence of the universe. Space, in other words, is permeated by nearly all the cosmic radiation which has been generated since the world began; the rays come to us from the remotest eras of time as well as from the farthest depths of space. There is indeed no knowing whether matter is being annihilated now or not. We cannot produce cosmic rays on earth, and hence it may be presumed that the physics which prevail out in the far depths of space and time are different from our terrestrial physics. The destruction of matter cannot at any rate be going on in our own earth to any great extent, for if it were the world would be much too hot for live things to exist.

So much for the destruction of matter, with which Sir JAMES JEANS is mainly concerned. There is, however, something to be said for its creation by the synthesis of electrons and protons, somewhere in space and under conditions of temperature which may be assumed to be the reverse of those favourable for its destruction. Prof. R. A. MILLIKAN in particular has argued that the cosmic rays arise, at any rate in part, from such syntheses as would be involved in the formation of helium from hydrogen. Some such conception would harmonise with the idea of a universe which has had no beginning and will have no end, and might be taken to represent in the dead world what life, death, and evolution are in the live world. Who can tell?

CONTROL OF ASBESTOS DUST IN INDUSTRY.

DISCLOSURE of the ill-effects exerted on the lungs of workers by asbestos dust [1] raised new problems in improved ventilation for dust suppression in asbestos textile factories. These problems have been surveyed by Home Office inspectors and employers concerned; and a report [2] embodying agreement on the danger points and methods of dust control has just been issued. The document is well illustrated, and sets out clearly the technique required for dealing with the unusual difficulties with which the asbestos trade is faced. At the same time it shows how far methods have improved in recent years for capturing dust at its point of origin and preventing it from escaping into the atmosphere of workplaces. It is unfortunate that explanation of the excellent plates can only be found by hunting through the text of the report. While a practical solution of the asbestos dust problem is here presented, it is noted that considerable time will be needed before the recommendations made can be carried out. Meanwhile, asbestosis must occasionally occur as a cause of occupational fatalities.

[1] Effects of Asbestos Dust on the Lungs and Dust Suppression in the Asbestos Industry. H.M. Stationery Office. 1930. 1*s*. 4*d*.

[2] Methods for Suppressing Dust in Asbestos Textile Factories. H.M. Stationery Office. 1931. 1*s*.

ANNOTATIONS

THE BRITISH ASSOCIATION CENTENARY MEETING.

In the early part of 1831 Dr. David Brewster, F.R.S., proposed to John Phillips, a geologist, who was then secretary of the Yorkshire Philosophical Society, the establishment of a "British Association of men of science." Phillips enlisted the support of his society, and interested some influential citizens of the town, and on Sept. 26th, 1931, the first meeting of the Association took place in York, 325 members being enrolled. The avowed objects of the Association then laid down have remained unchanged: "To give a stronger impulse and a more systematic direction to scientific inquiry; to promote the intercourse of those who cultivate science in different parts of the British Empire with one another and with foreign philosophers; to obtain more general attention for the objects of science and the removal of any disadvantages of a public kind which impede its progress." The Association holds annual meetings in towns in the United Kingdom or in the dominions. The centenary meeting this year (Sept. 23rd to 30th) will be the first to be held in London. The president will be Lieut.-General J. C. Smuts, F.R.S., supported by the following presidents of sections: Sir J. J. Thomson, F.R.S. (Mathematical and Physical Sciences), Sir H. B. Hartley, F.R.S. (Chemistry), Prof. J. W. Gregory, F.R.S. (Geology), Prof. E. B. Poulton, F.R.S. (Zoology), Sir Halford Mackinder (Geography), Prof. E. Cannan (Economics), Sir J. A. Ewing, F.R.S. (Engineering), Prof. A. R. Radcliffe-Brown (Anthropology), Dr. H. H. Dale, Sec. R.S. (Physiology), Dr. C. S. Myers, F.R.S. (Psychology), Prof. T. G. Hill (Botany), Sir C. Grant Robertson (Education), Sir John Russell, F.R.S. (Agriculture).

The addresses and discussions of direct interest to medical men will include the presidential addresses by Dr. Dale on the Biological Nature of Filtrable Viruses, and by Dr. Myers on the Nature of Mind; also the discussions on the physiological basis of sensation, biological experiments on man, resuscitation, social and industrial psychology, and the psychology of mental defect. The reception room will be at the Imperial Institute, South Kensington, and the sectional meetings will be held in various departments of the Imperial College of Science and Technology, at the Natural History and Victoria and Albert Museums, and at the house of the Royal Geographical Society at Kensington Gore. To mark the occasion of its centenary the Association is seeking to raise an endowment fund of £40,000. Contributions to the fund and all correspondence relating to the meeting should be addressed to the Secretary of the Association at Burlington House, London, W.

THE MECHANISED STUDENT.

Time was when the medical student, finding in his ward a new patient, sat by that patient's bed with a blank sheet of paper and wrote thereon such facts as seemed to him to be relevant out of the conversation they held. The subsequent criticisms of his chief taught him how to select and how to express what he had selected. In this country we have not got so very far from that to-day, but American methods of standardisation are creeping towards us, and those who have seen the immense dossier allotted to each patient in clinics run on the American method will be interested to hear that one of the originators of the systematised clinical record has already become alarmed at the growth of his own child. Dr. Eugene S. Kilgore[1] begs his countrymen to call a halt and make the technique of history-taking an intellectual rather than a mechanical process. Histories, he says, should exhibit uniform "clue-mindedness" rather than a uniform system of headings and paragraphs. He cites as an instance a Jewess, aged 45, whom he saw recently in a teaching hospital. Five minutes' conversation elicited the facts that her husband had died a year before, that she had then looked for support from her eldest son but had gradually realised that his talents were limited to the selling of newspapers, and she had therefore taken employment at washing dishes in a restaurant for eight hours a day, in addition to her home duties. She had the inevitable result: backache, insomnia, anorexia, exhaustion, and loss of weight. Her neat aluminium folder contained five and a half closely written pages of writing divided into 28 captions, all neatly underlined with red ink and ruler. The half-dozen really important items in her story were scattered far apart from each other under such headings as "social condition," "occupation," and "marital history," with shortness of breath under "cardio-respiratory system" and flatulence under "gastro-intestinal." Dr. Kilgore rightly declares that his student could have made a better history before he ever set foot in a medical school. He suggests that the attempt to amplify records for future statistical researches should be abandoned in ordinary teaching hospitals; it would be enough if it were maintained for special purposes in institutions where there is a reasonable possibility that the data will be suitable for use and will be used. He suggests that students should be taught to consider content rather than form and to follow out significant clues with exhaustive thoroughness. They will not overlook any more important data under the régime of free composition than they do under the régime of conventional paragraphs. British physicians have never cared for the mechanisation of their clinical scouts; they are likely to remain content with the intelligent amplification of four or five main headings.

VASCULAR PERISTALSIS.

Just before the war certain German physiologists claimed to have demonstrated electrical changes in arteries, which they held to be indicative of active contraction of the muscular coat. Blumenfeld, however, discredited this interpretation by showing that these changes in electrical potential could be explained on a purely physical basis as the result of the pulse-wave throwing a mass of blood against the wall of the vessel. R. M. Wilson,[2] on theoretical grounds and from a reconsideration of arterial pulse tracings, postulated an active arterial peristalsis. This view met with very little acceptance, and it is difficult to conceive of a peristaltic wave which could travel at the same rate as the pulse, while if it did not do so a pulse tracing should show two different and asynchronous waves. Now, however, A. Luisada[3] has reinvestigated the question from the

[1] Jour. Amer. Med. Assoc., 1931, xcvii., 93.
[2] The Hearts of Man, London, 1918.
[3] Arch. des Mal. de Cœur, May 1931, p. 305.

aspect of changes in electrical potential along the course of the vessel. By means of high amplification he has been able to demonstrate diphasic followed by monophasic currents in the arteries of animals with each pulse-wave. He has repeated these observations on human subjects with the same results, and claims that these changes are evidence of muscular contraction, since control experiments on dead arteries and elastic tubes were absolutely negative. This work suggests that each pulse-wave is the stimulus to an active contraction of the arterial wall. In veins, also, he found electrical changes, but here of such large amplitude that it was possible to record them without amplification. The feature of these "venous electrograms" is the fact that the "contractions" are wholly irregular and cease after occlusion of the proximal end of the vein. Whatever may be the correct interpretation of these findings they form an interesting contribution to the discussion whether or not an active rôle should be ascribed to the arteries and veins.

SYMPATHETIC GANGLION LESIONS IN SCLERODERMA.

THE ætiology of scleroderma is still much disputed, but facts are accumulating to support the view that implication of the sympathetic nervous system is associated with, or possibly the cause of, the disease. Dr. Geoffrey Blake describes a case [1] of a woman of 30, who had attended hospital in 1919 for symptoms pointing to Raynaud's disease. This is not remarkable, for in the earlier stages of the sclerosing condition the extremities are often blue and cold, and the finger tips and nail beds may present atrophic changes. She was not seen again until 1923, when the skin changes had progressed and were recognised for what they really were, scleroderma with some degree of leukoderma, and the emaciation often associated with this condition. There were, in addition, symptoms pointing to spasm of the œsophagus, confirmed by X ray examination. In July, 1929, X ray examination revealed obstruction at the pylorus, with dilatation of both the large and small intestines with almost complete obstruction of the descending colon. Ileo-sigmoidostomy was performed, but diarrhœa and vomiting were not relieved, and a cæcostomy was felt to be imperative. But the symptoms were not relieved, and the patient died on Sept. 22nd, 1929. At the autopsy, 12 hours later, sections were made of the skin and of portions of the endocrine glands. The changes due to scleroderma, which had been confirmed by a biopsy of the skin during the patient's lifetime, were again demonstrated. These included loss and atrophy of the papillæ, excessive pigment in the rete, dense sclerotic tissue in the dermis, with secondary atrophy of the cutaneous appendages. There were no definite microscopic abnormalities in any of the endocrine glands. The whole large intestine showed an abnormal degree of dilatation, which was so pronounced as to mask hypertrophy of moderate type. Of great interest and importance—especially if they are confirmed by reports on other autopsies—are the changes described in microscopic sections of the lower cervical sympathetic ganglion. The ganglion cells are said to be fewer than normal, many show striking changes. Some are enlarged and pale and show marked loss of finer structure; they appear to be "blown up." Others are small and shrunken, and stain deeply. Such changes have not been found in a series of controls taken at the same time after death. Other observers have sought in vain for such changes in the nervous system, although symptoms such as facial hemiatrophy and trophoneuroses, and the not-infrequent zonal distribution of sclerodermic plaques, would tend to support the association between scleroderma and lesions in the sympathetic nervous system. That Raynaud's syndrome is likely to be due to disease of this system would seem to follow from the results of arterial sympathectomy, and the clinical resemblances between scleroderma and Raynaud's disease in their early stages adds weight to the possibility of a common ætiology.

[1] Bull. Johns Hopkins Hosp., April, 1931, pp. 212–227.

LEGUMINOUS CROPS AND MALARIA.

Prof. Hans Ziemann,[1] of Berlin, notes that under apparently similar physical conditions, and with similar mosquito prevalence, the amount of malaria may be surprisingly different. D'Herelle informs him that he noticed in the Argentine, 20 years ago, that leguminosæ grew about the streams and swamps in the malaria-free districts, but not in those where there was malaria. He observes that malaria disappeared from some islands of Holland in 1880, when clover from the south of France was sown there, and he agrees with Sir William Willcocks in ascribing the freedom of most of Egypt from malaria to the growth of wild clover, which is absent in the Suez canal zone, in Palestine, and in Greece, where the infection is prevalent. D'Herelle ascribes the influence of these leguminosæ to the coumarin contained in their blossoms, which appear in the malarial (summer and autumn) season. Ziemann also quotes Krysto, of the Russian Agricultural Department, writing in the *Scientific American* for April, who says that 35 years ago, when he lived in the Caucasus, everyone in his valley had malaria except the four who had planted beans and lucerne around their houses; he has seen the same in the Southern States and in Argentina, where malaria disappeared when lucerne was sown, though mosquitoes persisted as before. It is suggested that when the female mosquito sucks juice from these flowers she is either cured of her infection (as a man by quinine), or the gametes are sterilised. These questions have yet to be studied, and Prof. Ziemann calls for experiment. He gives a list of some 80 coumarin-containing plants and invites people living in a malarial district to choose those that will suit the climate, remembering they must flower throughout the worst season of infection.

[1] Arch. f. Schiffs- u. Tropen-Hygiene, July, 1931, p. 410.

SPEECH AND VOICE.[2]

IN spite of numerous painstaking researches our knowledge of the exact mechanism by which the sounds of speech are produced is still very inexact. Especially is this the case for the production of the vowel-sounds which, although the variations of movement involved are probably very minute, are easily detected by the ear. The differences of voice quality present a similar problem; here personal quality and family resemblances are very definite, so as readily to be recognised even over the telephone, and probably depend on very small differences in the shape and structure of the producing cavities. Sir

[2] Speech and Voice, with X Rays of English, French, German, Italian, Spanish, Soprano, Tenor, and Baritone Subjects. By G. Oscar Russell, Ph.D., Director of Phonetics, Laboratories and Speech Clinic, Ohio State University. New York: The Macmillan Company. 1931. Pp. 250. 17s.

Richard Paget, whose work was reviewed in these columns a little over a year ago,[3] made extensive experiments with models to show that the vowel-sounds are musical tones of definite pitch, each associated with a pair of resonators formed by the throat and mouth. Mr. G. O. Russell does not believe that "cavity tone" supplies the entire solution of the problem, but thinks that the character of the surfaces and walls of the vocal cavities may be quite as important. He has evolved a method of showing the shape of the mouth and throat cavities, during speaking and singing, by means of X ray photographs, using a marker to fix the median sagittal plane. The technique is not exactly described, but a specially prepared thread is swallowed, which adheres to the mid-line of the tongue. It is difficult to see how the mid-line can be marked out in this way for other parts of the cavity. On the numerous pictures given in the text the cavities have been marked out in white, which makes them easier to read, but which also necessarily raises some little element of doubt. Mr. Russell also employs a "laryngo-periscope" of his own design, which enables the interior of the larynx to be examined during phonation, and he provides some interesting photographs taken by this means; a description and illustration of the instrument would be of interest. His X ray studies comprise over 400 subjects and 3000 experiments; this large mass of material has not yet been thoroughly digested, and the conclusions reached cannot be considered final. He believes that the X ray pictures of the mouth and throat positions during production of the different vowels will be of value, not only for the instruction of singers and in the pronunciation of foreign languages, but in the teaching of deaf-mutes.

THE B.M.A. AT EASTBOURNE.

THE members of the British Medical Association were fortunate in having three days of anticyclonic weather between two periods of rain and cold. The visitors, who took advantage of the many motor tours provided for them, saw Sussex at its very best—poppies, thistles, rampion, and cornflower blazed in the cultivated patches and a multitude of what Hudson called the "fairy flora of the downs" chequered the "wise turf" of Beachy Head and the Seven Sisters. Brilliant sunshine favoured the Civic Garden-party in the beautiful grounds of Folkington Manor on Thursday afternoon, and Devonshire Park provided a handsome setting for the evening receptions. Over 1100 members and guests attended the President's reception on Tuesday evening, and nearly as many were to be seen at the Civic Receptions on the two subsequent evenings and at the Marquess of Hartington's ball on Friday night. The annual general meeting was held in the Town Hall, where members robed for the procession to St. Saviour's Church for the official religious service. The sermon was preached by the Bishop of Chichester, and the service was preceded by a brief ceremony of remembrance at the war memorial. An attraction to many visitors was the county cricket match, Somerset *v.* Sussex, which was conveniently timed to take place on the three days of the meeting, while golf competitions and tennis tournaments were available for the strenuous. Medical missionary, and temperance breakfasts were held as usual, and, in addition, a Rotary luncheon, an Irish graduates' luncheon, a Masonic meeting, and a secretaries' dinner claimed attendance from those suitably qualified. The popular lecture was delivered by Prof. F. T. G. Hobday on Some Diseases of Animals Communicable to Man. The lecturer laid special stress on the regrettable existence of tuberculous milk and the chaotic state of the present regulations governing milk-production and sale in this country. Some interesting films were shown. The first was a record of the Canadian meeting last year; the second was a "talkie" depicting lower segment Cæsarean section as performed under local anæsthesia by Dr. J. B. De Lee at the Chicago Lying-In Hospital. Dr. R. G. Canti showed to enthusiastic audiences his latest moving pictures of microscopic life, and Petrolagar Laboratories showed a series of films illustrating intestinal movements in animals. A party of 100 people was entertained to a tour of the Level, dinner, and a concert by the Hastings Division and Corporation on Friday afternoon and evening, and other parties visited neighbouring medical institutions.

[3] THE LANCET, 1930, i., 1074.

RIVER POLLUTION—THE TEES SURVEY.

How is it that some rivers manage of themselves to purify the polluting liquids they receive? What quantities of different effluents can these rivers deal with without destroying the conditions of self-purification? Faced with such questions as these, the Water Pollution Research Board decided to examine a typical river flowing through an industrial area. It chose the Tees, which, in the 12 miles between Stockton and the sea, takes not only the effluents of many factories, but also the untreated sewage of Thornaby, Stockton, Middlesbrough, and Billingham. A Tees Survey Committee began work in April, 1929, and the first instalment of information is now published.[1] It deals with the hydrography of the tidal river; complementary studies of the biological and chemical aspects will take another three years to complete. Meanwhile the Ministry of Agriculture and Fisheries is examining the non-tidal reaches.

One important result of the hydrographical survey is our definite knowledge of the movement of currents at different depths. At most of the observing stations the flood was found to run strongest at a depth below 1 fathom; the ebb, without exception, was strongest on the surface. From the surface to a depth of 1 fathom the current ebbs longer than it floods. Below 2 fathoms the flood runs for 6¼ hours or longer, and the ebb is less than 6 hours. The maximum speed of the flood is at 1 or 2 fathoms' depth, and not at the bottom, where friction against the river-bed retards the flow. We have to reckon with the different density of fresh and salt water. We find the flood running up-stream in the deeper layers, while the ebb is still running out on the surface. Thus the broad inference appears that polluted matter will not readily escape seawards unless it is in the surface layer. It is important, therefore, though apparently not easy, to obtain accurate measurements of the thickness of the upper layer. Useful evidence of silting, explicable with better knowledge of the depth of the river-bed and the strength of the current, is available from the experience of the Tees Conservancy dredging operations. Indeed, the coöperation of local interests in the survey is a hopeful sign. When all the results of the inquiry are published and coördinated, there should be much to learn. In a preface to the report of the hydrographical survey, Mr. H. T. Calvert, D.Sc., the

[1] Water Pollution Research: Technical Paper No. 2. Survey of the River Tees, Part I.—Hydrographical. Published by H.M. Stationery Office. 5*s.* 6*d.* net.

Director of Water Pollution Research, can fairly claim that this pioneer work, with its apparatus of tables and diagrams, will be a useful precedent and pattern for similar investigations elsewhere.

LORD KNUTSFORD.

THE announcement of the death last Monday of Lord Knutsford has been received with deep regret by the medical profession, who recognised in him a life-long and tireless worker in the cause of the sick poor. A pioneer in the service of the voluntary hospitals, who lived to be a veteran in that service, his enthusiasm never faltered, his courage never wavered, and his dogmatism had the justification of unrivalled experience. Forty years ago, when a director of a London dock company, he visited an injured labourer in the Poplar Hospital, and the sequel of his errand of mercy forms an apt illustration of his character. His senses having convinced him that the building was obsolete and the management deplorable, he took immediate charge, unsupported by the managing committee, raised the money urgently required to render the structure sanitary, started new buildings, and a new administration.

LORD KNUTSFORD.
[Photograph by G. C. Beresford

His practical success in the smaller place led to an invitation which 30 years ago brought him to the assistance of the London Hospital. He was placed on the committee of management, and submitted, almost on the spot, to that body a report on the existing condition of affairs, with the result that the sitting chairman resigned and Sydney Holland, as he then was, took his place with the avowed object of introducing drastic reforms. What has happened to the institution during the last 30 years is known to everyone. Great things were done and great men adorned the staff of the hospital before the era of change, but the work was carried on in conditions that to-day would seem incredible, and even at the time were recognised as faulty. The growing need for laboratories had not been met; operating surgeons were hampered by lack of facilities at the very time when the discoveries of Lister were making the fields of operation almost infinitely larger; while accommodation for nurses was almost absent. To-day, under Lord Knutsford's chairmanship, the hospital, while housing some 30 per cent. more patients, is a model centre of healing in all its branches, is fully furnished with laboratories, has a fine college affiliated to it, and a famous training institution for nurses. The vast expenditure of public money thus implied was made possible by Lord Knutsford's extraordinary power of extracting money. In his numerous appeals he was forcible, pathetic, and witty by turns, or a very effective blend of all three. While he argued or persuaded with recurring success large groups of the public to aid the London Hospital, he was also particularly fortunate in his attacks upon individual purses. This was well revealed in an amusing book, "The Prince of Beggars," written by one of his former private secretaries, in which Lord Knutsford's methods of securing subscriptions and donations to "the London" were recorded.

Lord Knutsford had made a particular study of the nursing question, and had been successful in introducing drastic reforms at the London Hospital. Inevitably he found it difficult to believe, without statistical evidence, that a shortage of candidates could exist sufficient to justify the setting up of a commission of inquiry by THE LANCET. He narrated his views on the subject to the Editor of THE LANCET in frank letters and in more than one conversation. At his own institution, he said, there was no shortage of nurses and no criticism of the conditions of service in hospitals had reached him. It was characteristic of him that, although he remained unconvinced of any need for the inquiry, he gave us his personal assistance in supplying answers to the questionaire, the document being preceded by an ironical blessing of his friend, the chairman, and the statement that it had taken more than five hours to fill up.

While work at "the London" employed most of Lord Knutsford's time and energy, he was always to be found as a public champion in the cause of progressive medicine, as was fitting in the grandson of that great physician Henry Holland. He took many opportunities in the House of Lords of recording the debt owed by humanity to the scientific discoveries of medicine, and one of his last public appearances must have been at the annual meeting of the Research Defence Society over which he presided. Not only the voluntary hospitals but all those connected with the advance of medicine will mourn his loss, while men and women placed in every status of society will feel the loss of his genial and forceful friendship.

CHEMICAL SPERMICIDES.

THE July number of the *Journal of Hygiene* contains the third of a series of papers by Mr. J. R. Baker, D.Phil., in which he reports on a long programme of experiments[1] upon the spermicidal power of chemical contraceptives conducted by him in the department of zoology and comparative anatomy at Oxford. These experiments are not yet complete, and it would be premature to regard any of the findings so far published as affording guidance as to which chemical substance or which proprietary product is most satisfactory from the clinical point of view. At the same time there is good reason for supposing that when the series of tests is complete there will be placed at the disposal of the medical profession a spermicidal pessary considerably more effective than any now in use.

The present paper describes a careful comparison of the effects upon guinea-pig and human sperm of several of the contraceptive suppositories and foaming tablets now on the market. An attempt is made to evaluate the relative spermicidal rôles of the foaming substances contained in these articles as against the ingredients which act by purely chemical means. It is further shown that the cocoa-butter base, in which quinine and chinosol are often incorporated, exerts a neutralising effect upon these substances. Thus grs. 5 (0·324 g.) of finely powdered quinine bisulphate or grs. 3 (0·195 g.) of chinosol, which are the quantities contained in a vaginal pessary, will completely immobilise spermatozoa in a quarter of an hour. The same quantities of the same substances, when incorporated in a cocoa-butter base, have no

[1] See also THE LANCET, 1930, i., 366.

appreciable effect in a much longer period. From these results, however, it is not to be concluded that the contraceptive value of pessaries, consisting of quinine or chinosol in cocoa-butter, is negligible. There is now available in unanalysed form a considerable body of evidence that many women have successfully spaced their pregnancies by using these pessaries alone. There is therefore a strong implication that the cocoa-butter may exert a contraceptive effect by covering the cervix with a thin film which impedes the ingress of spermatozoa. This mechanical action is acknowledged as an important clinical factor by Dr. Baker, who clearly realises that his experiments take no account of it.

Research in the direction of improving contraceptive methods may take two directions. In the first place, it is necessary to ascertain the comparative contraceptive value of different vehicles, whose action is purely mechanical; in the second place the comparative spermicidal power of chemical substances must be determined. Dr. Baker's investigation of the second group of problems has already exploded a highly misleading fallacy. He has shown that the assumption made by certain manufacturers that because a substance is a good germicide it is also a good spermicide is erroneous. Thus, sodium dichloryl-sulphamidbenzoate, the chief ingredient of one of the most widely advertised foaming tablets, was found by him to have the lowest spermicidal power of any of the chemical substances he has examined. When the parallel investigations of vehicles and spermicides are complete, it will be necessary to combine the most effective of these in such a way that the chemical activity of the spermicide is little or not at all impaired by the vehicle. The next step will be to ascertain the minimum concentration of the spermicide which is capable of producing vaginal or uterine injury in animals; and, if possible, to assure ourselves that the combination cannot damage the sperm in such a way as to lead to the production of defective individuals in later generations. These researches are now being carried out.

THE LIGHTING OF SCHOOLS AND LIBRARIES.

THE Council of the Illuminating Engineering Society has published the reports of three sub-committees dealing with the lighting of schools and libraries.[1] A report on library lighting was published in the *Illuminating Engineer* for July 13th, 1913, and the present report brings that up to date. The chief requirements of a library are sufficient illumination, together with the avoidance of dazzle, glare, and shadow. The ceilings and walls should be finished in a light colour, as they then add diffused light, and soften shadows and contrasts. Polished and glossy surfaces should be avoided. No unshaded lamp-filament or gas-mantle should be visible at any angle to persons reading at the tables, and the shades on stand lamps or table lamps should be opaque or of very low surface brightness. For general illumination of the room the lighting should be not less than one foot-candle and the illumination on the tables from all sources not less than five foot-candles. If supplementary lighting is needed for newspaper stands, it is conveniently supplied by tubular lamps in trough reflectors, slightly above and about a foot in front of the top line of the stand, giving a well-diffused source of light.

The first report on the lighting of schools is a revision of that issued in the same journal in July, 1914, and deals with daylight. It takes as the minimum standard of adequate light for ordinary purposes 0·4 per cent. sill-ratio or 0·2 per cent. daylight-factor. It recommends that every child should have a view of the sky from its desk and that the area of sky visible should be sufficient to afford an illumination on a horizontal plane at desk or table height equivalent to a daylight factor of 0·5 per cent. of the illumination from a complete hemisphere of sky, all parts of which are equally bright. Windows should preferably be on the left of the pupils, and any windows on the right should be designed for cross ventilation only, or for the admission of sunlight to the room when pupils are out. Roof lighting is undesirable, and windows facing the pupil are highly objectionable. Window-heads should be horizontal, and the glass should be carried up unobstructed if possible to ceiling level. The ceiling should be white and the walls light in colour, while desks and furniture should be light and unobtrusive.

Another committee reports on the artificial lighting of schools,[2] and recommends that the illumination on desks and tables should be five foot-candles for ordinary work and eight foot-candles for special work. For assembly and recreation rooms three foot-candles is considered sufficient, and the general illumination should nowhere be less than one foot-candle. On blackboards the light should be 60 per cent. in excess of that on desks or tables. Great importance is attached to the avoidance of glare, and it is recommended that no incandescent or bright reflecting surface should be visible to the eyes of teacher or pupils at work and no source of light—unless completely screened—should be below a line drawn from a point on the back wall 3 ft. 6 in. above the floor to a point 4 ft. above the upper edge of the blackboard surface. Blackboards should be maintained in a dark and matt condition, and books should be printed, as far as possible, on matt paper. Objectionable shadows are to be avoided by obtaining light from diffusing media and keeping the walls and ceilings light. Lights on stairways must be placed so that each flight is illuminated from above and below, and shadows of risers on the treads are avoided. In classrooms four lamps not less than 10 ft. above the desks are convenient, but additional units may be necessary for the blackboard and the teacher.

[1] Copies can be obtained on application to the Hon. Secretary, Mr. J. S. Dow, 32, Victoria-street, S.W.1.

MEDICAL RESEARCH COUNCIL.

Lord Dawson of Penn, President of the Royal College of Physicians of London, and Dr. Edward Mellanby, F.R.S., professor of pharmacology in the University of Sheffield, have been appointed members of the Medical Research Council in succession to Prof. T. R. Elliott and Prof. J. B. Leathes, who retire in rotation on Sept. 30th.

INDEX TO "THE LANCET," VOL. I., 1931.

THE Index and Title-page to Vol. I., 1931, which was completed with the issue of June 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

[2] See also THE LANCET, 1929, i., 243, and 1930, i., 475.

SPECIAL ARTICLES

THE PROGRESS OF WORK ON CALMETTE'S B C G VACCINE.

CALMETTE has given a general review of the progress of B C G work in France and in other countries in his report to the Seventh International Conference against Tuberculosis, held at Oslo, 1930.[1] At a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine, held on June 9th, 1931, he described the experimental and clinical results which he had obtained (vide *The Lancet*, 1931, i., 1298, and the *British Medical Journal*, 1931, i., 1070).

The number of infants immunised with B C G in France during the period July 1st, 1924, to May 1st, 1931, a period of over 5½ years, exceeds 336,000, and there are now more than a million vaccinated children in the world. Calmette states that between the age of one month and the end of the fourth year the mortality in France from tuberculosis of children born of tuberculous mothers or brought up in a tuberculous environment, is 15·9 per cent., while it is only 3·4 per cent. for children in this age-period who have been vaccinated with B C G. The treatment is not designed to produce a permanent immunity, but to give sufficient resistance to the child to carry it through a dangerous period of life and to enable it to go through the usual course of natural immunisation to tuberculosis by repeated small infections without the risk of such infections becoming progressive. In other words, the immunising value of B C G is transient.

Calmette and his associates are emphatic that B C G is an efficacious prophylactic agent against tuberculosis, and that its use is innocuous. They do not deny that the organism is capable of producing lesions in the animal body, but they claim that such lesions are entirely benign and incapable of developing into active centres of tuberculosis. It has been further shown that B C G can be recovered from these lesions, but is still incapable of setting up a progressive tuberculous infection on reinoculation into fresh animals. These contentions and experiments have been supported by other observers. Lange and Clauberg[2] find B C G innocuous in guinea-pigs, and Kühn[3] and Okell and Parish[4] could neither produce generalised lesions nor raise its virulence. Similar observations have been made by Jensen, Morch, and Orskov,[5] and Remlinger and Bailly,[6] King and Park[7] find that B C G gives an appreciable immunity in guinea-pigs and Wilbert[8] and Gerlach and Kraus[9] find it of immunising value in monkeys. Webb[10] considers it should be administered to infants born of parents with open tuberculosis. Similar views in regard to the value of B C G in protecting children from tuberculosis have been expressed by Bernard,[11] Biraud,[12] Blanc,[13] Keller,[14] Malvoz and Van Beneden,[15] Moine,[16] Ott,[17] Rougebief,[18] and Weill-Halle and Turpin.[19]

Criticisms of B C G.

The observations of many other investigators raise doubts as to the innocuity and immunising value of B C G. Watson,[20] who has made prolonged observations on guinea-pigs, rabbits, and cattle, feels "fully warranted in considering B C G vaccination as in the experimental stage, and, in respect to its innocuity and efficiency, open to question." Larson and Evans,[21] Schroeder and Crawford,[22] Korschun and Dwijkoff,[23] and Uhlenhuth, Müller, and Hillenbrandt[24] find it of no value in cattle. Petroff[25] and others have found that guinea-pigs vaccinated with B C G were not protected against a subsequent experimental infection. Nohlen[26] had similar results in monkeys and Schlossmann's experiments[27] on monkeys offer him but little hope that Calmette's aim to eradicate tuberculosis by prophylactic immunisation has been achieved. Armengol,[28] Chiari, Nobel, and Sole,[29] Galli-Valeria,[30] Hutyra,[31] Moti Malkani,[32] Petroff, Branch, and Steenken[33] noticed that some of their animals died of tuberculosis after B C G inoculation, and that the virulence of B C G could be raised by animal passage. Lignières[34] does not regard B C G as harmless, and is of opinion that it confers only a transient immunity. Loewenstein[35] observes that an organism which is not virulent for the guinea-pig may be gravely pathogenic for man, and that its virulence may increase, especially in the young. Calmette's contention that if B C G is ingested during the first ten days of life enough of it would be absorbed to protect against a subsequent exogenous infection has been severely criticised on experimental grounds by Petroff[25] and others. Wallgren,[36] from his experiences in children, finds that the amount of B C G absorbed by an oral route is uncertain, and that a tuberculin reaction is the only evidence that vaccination has taken place.

Clinical observations and fatalities amongst B C G-vaccinated children have been reported by Baigue,[37] Chenard and Ferrier,[38] Girod and Debarge,[39] Heynsius van den Burgh,[40] Munoverro,[41] Nobecourt,[42] Pirquet,[43] Saye, Domingo, and Miralbell,[44] Taillens,[45] and Weill-Halle and Turpin.[19] These findings are not in accord with the entirely favourable reports which Calmette publishes from time to time regarding the innocuity and efficiency of B C G in children.[46]

Investigations in Great Britain.

Shortly after the publication of Calmette's early results, a special committee was set up by the Medical Research Council in close accord with the Ministry of Health to investigate the question of B C G. The committee desired in the first place to examine the work on B C G from the statistical and bacteriological standpoints before entering upon any clinical investigation. The statistical inquiries of Prof. Major Greenwood, F.R.S.,[47] of Wolff, in Germany, and of Rosenfeld, in Austria, have been critical of the figures quoted by Calmette, and others in favour of the B C G results. Their criticism falls under two heads. It deals with Calmette's figures on technical statistical grounds, and in the second place it draws attention to the inherent dangers of fallacy residing in the fact that infants receiving *any* special prophylactic treatment are likely to be given, consciously or unconsciously, better guardianship of many kinds than they would otherwise have received.

The experiments of Dreyer and Vollum[48] tend to show that under conditions of cultivation in a fluid medium B C G cultures can regain their former virulence. Stanley Griffith,[54] working for the Tuberculosis Committee of the Medical Research Council, shows that B C G produces little or no immunising effect in the monkey against subsequent tuberculous infection. His conclusions are as follows :—

(1) The strain of B C G used in these experiments can produce local lesions in the rhesus monkey, but these are always benign and do not lead to generalisation.

(2) B C G given by the mouth can pass through the mucous membrane of the alimentary canal into the adjacent glands and also gain access to the blood stream.

(3) Vaccination with B C G, whether by feeding or by injection, has failed to give to monkeys the complete protection against tuberculosis reported by Wilbert, but in some instances may have produced a low grade of relative immunity.

The preliminary results obtained by J. B. Buxton and Stanley Griffith[49] with calves are more encouraging.

The authors arrive at the following conclusions:—

(1) The strain of B C G used throughout these experiments would appear to be avirulent for the calf and incapable of giving rise to progressive tuberculosis even when inoculated in large doses.

(2) Whether given by the mouth or intratracheally, or by subcutaneous or intravenous injection, B C G can raise the resistance of a calf to a virulent experimental infection.

(3) An increase of resistance is less certain after feeding with B C G than after intravenous injection, though feeding with the vaccine may in some instances induce as high a resistance as injection into the tissues.

(4) Intravenous injection has proved the most satisfactory method of vaccination with B C G.

(5) The degree of increased resistance conferred upon calves by intravenous vaccination varies within wide limits, and appears in general to be directly proportionate to the dose of B C G vaccine.

The experiments were, in the first instance, concerned with questions of the best method of administration and dosage of B C G. The tests of resistance were made therefore after an interval when one might suppose that the resistance was at its highest level—that is, from two and a half to three months from the beginning of the vaccination. In future work the authors propose (*a*) to ascertain the duration of the increased resistance produced by intravenous vaccination; (*b*) to test the resistance of intravenously vaccinated calves against a natural mode of infection; (*c*) to compare the resistance produced by other antigens.

It will be recalled that Petroff[33] differentiated "rough" and "smooth" colonies in cultures of B C G. He found the smooth colonies were virulent, the rough colonies avirulent. In a recent paper R. S. Begbie[50] reported that he had obtained three types of colony from a culture of B C G—namely, "smooth," "rough," and "intermediate." Experiments on guinea-pigs did not show clear-cut lines of demarcation in the virulence of the types of growth obtained, but definite variation was noted, the "smooth" type being most virulent, the "rough" type intermediate in virulence, and the umbilicated or "intermediate" type of growth the least virulent. Begbie concludes that variants from B C G are capable of producing death from tuberculosis when inoculated into guinea-pigs, and therefore the suitability of B C G for immunisation of infants against tuberculosis must still remain open to question.

The Catastrophe at Lübeck.

During the period Feb. 24th to April 25th, 1930, 251 infants within the first ten days of life were given B C G vaccine by mouth in Lübeck. The vaccine was prepared from a culture obtained from the Pasteur Institute in Paris, and was issued from Prof. Deycke's laboratory. Some of the vaccine was administered by Prof. Deycke and his assistant, but most was entrusted to the midwives in attendance upon the births to give. According to Bruno Lange,[51] up to Oct. 18th, 1930, 74 of these children died, but seven of the deaths were not attributed to tuberculosis. Sixty-seven of the deaths were due to tuberculosis. The lesions extensively involved the glandular system, especially the mesenteric glands, and extended to the tracheobronchial glands and the lungs. The cultures obtained from the lesions proved to be those of a virulent human type of tubercle bacillus, which Bruno Lange has identified with a culture which was sent out by the Robert Koch Institute to the Kiel Laboratory, and which was sent to Lübeck at the request of Prof. Deycke in October, 1929.

Immediately, on the news of the catastrophe, Prof. G. Dreyer, F.R.S., and Captain S. R. Douglas, F.R.S., visited Lübeck on behalf of the Medical Research Council. They made a confidential report to the Tuberculosis Committee of the Medical Research Council in which they described the pathological lesions, but suspended judgment as to the cause of the fatalities pending an investigation by the German Imperial Health Council.

The report of the chief member of the Government Board, Prof. Ludwig Lange, to which have been added the statements of Prof. Neufeld (Berlin) and Dr. Kirchner (Hamburg), caused the German Imperial Health Council at its sittings on Dec. 12th and 13th, 1930, to arrive at the following conclusions regarding the fatalities at Lübeck. The illness and deaths of the infants were not traceable to the original B C G cultures, but were probably due to some unexplained admixture with virulent tubercle bacilli. The Imperial Council have also confirmed their decision of 1927 that the use of living bacilli, even in an attentuated form, for human prophylaxis is undesirable in the present state of knowledge. Calmette has drawn special attention to the exoneration of B C G in the Lubeck disaster.[52]

Conclusion.

This review of the progress of work on B C G will account for the conservative attitude in Great Britain towards the use of the vaccine. Observations on the subject made at the Seventeenth Annual Congress of the National Association for the Prevention of Tuberculosis this year indicate that at present B C G is still regarded as being in the experimental stage. While uncertainty still persists as to whether the living vaccine, B C G, is free from virulence under all conditions and doubt is expressed as to its effective immunising properties, its use as an immunising agent, particularly for young children, is unlikely to be advocated in this country on any extensive scale.

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THE SECOND INTERNATIONAL ORTHODONTIC CONGRESS.

THIS Congress was held at the Savoy Hotel, London, from July 20th to 24th, under the presidency of Mr. J. H. Badcock. Over 20 countries were represented, the total membership being over 400. The Congress was opened by the Mayor of Westminster, who welcomed the members to the historic city of Westminster. A letter was read from the Minister of Health, who regarded the selection of London in succession to New York as the meeting place of the second Congress as a tribute to the contributions to orthodontics by the President-General and others in this country.

After the Honorary Presidents from abroad had been welcomed by the President-General, the latter, in the course of his

PRESIDENTIAL ADDRESS,

said that orthodontics was the science and art connected with the causes and treatment of malformations of the jaws and irregularities of the teeth. It was important from the social, economic, and hygienic standpoints. An unsightly irregularity of the teeth might be the cause of an inferiority complex. It might be prejudicial to health in various ways by leading to caries and pyorrhœa. Malocclusion of the teeth was a concomitant of civilisation, and it was probably true that the more artificial the conditions under which a race lived the greater would be the percentage of persons affected with malocclusion. Malocclusion was not limited to the human race, for, according to Sir Frank Colyer, every form of irregularity might have its counterpart in the lower animals. The President suggested that a possible cause for the occurrence of malocclusion in man and animals might be deficient diet, leading to defective bone growth. The possibility of sexual selection should not be overlooked, for the somewhat narrow upper jaw, with the teeth just in evidence, and the dimple in the chin associated with mild cases of distal occlusion, undoubtedly had its attractions. Mr. Badcock paid a tribute to the earlier workers on the subject, such as John Hunter and Duval. He said that the profession owed much to the late Dr. E. H. Angle, who gave a new trend to orthodontic thought and practice. A vote of thanks to the President-General was proposed by Dr. Grieve, and carried with acclamation.

SCIENTIFIC PROCEEDINGS.

Mr. H. F. Humphreys (Birmingham) discussed the changes in the temporo-mandibular joint and its bearing on orthodontics, especially in relation to the treatment of post-normal occlusion. Dr. G.W. Grieve (Toronto), in a paper on Orthodontic Diagnosis, advocated strongly the claims of extraction in treatment, and said that many cases treated by expansion of the jaw only relapsed. Mr. H. Chapman (London) also read a paper on Extraction as a Part of Treatment, in which he gave reasons why extraction was often advisable and led to better results than the retention of all teeth. Both these papers received considerable discussion. In the absence of Prof. Simon, of Berlin, his important paper on the Practical Value of the Biometrical Norm in Orthodontics was taken as read. Dr. Martin Schwarz (Vienna) described experiments on dogs, in which the teeth were moved by means of appliances and the bone examined microscopically after the animals had been killed. The results had led him to the conclusion that the findings of Oppenheim, which were based on similar experiments and had long been accepted, were wrong.

Mr. G. G. and Mr. D. H. Campion read a joint paper on Facial Measurements in Diagnosis, in which they described investigations carried out over several years for the Dental Committee of the Medical Research Council. A paper on the Growth Changes of the Teeth and Dental Arches, by Mr. S. J. Lewis, Mr. I. Lehman, and Mr. M. Mumblatt, of Detroit, evoked a keen discussion. An interesting paper on Oversized Tongues as a Cause of Malocclusion was read by Dr. F. Neumann (Prague), who described several cases of irregularities of the teeth apparently caused by large tongues. Mr. V. H. Kazanjian (Harvard) gave an account of five cases of inferior protrusion treated surgically by resection of the mandible with excellent results. The Local Factors in the Ætiology of Malocclusion were dealt with exhaustively by Dr. Axel Lundström (Stockholm). The Changes in the Teeth and Jaws in Acromegaly were discussed by G. Korkhaus (Bonn). The place of Orthodontics in Dental Education was discussed by Leroy Miner (Boston) and C. Nord (Holland).

SOCIAL FUNCTIONS.

A banquet was held at the Savoy Hotel on July 23rd, the President-General being in the chair. More than 200 members and guests attended. After the toast of "The King," proposed by the President-General, a presentation of golf trophies was made, and the toast of the evening, which included in its terms "The Nationalities Represented," was proposed by Mr. T. Watts Eden, president of the Royal Society of Medicine. He offered greetings from this

society. It had been said that deterioration of the teeth began in man when he first began to cook his food. No progress in preventive measures, he said, would be made until the cause of dental defects was found and explained to the people, and their sympathies enlisted. The dentist had succeeded in thus gaining the confidence of the people in preventive measures, for they visited him regularly to see if all was well with their teeth. It was rare indeed for anybody to go regularly to his doctor to see if he was sound in body and mind. A great responsibility lay upon the orthodontist in blazing the trail of prevention. He coupled with the toast the names of Dr. E. T. Bennett (Australia), Dr. Casto (U.S.A.), Dr. Brufau (Argentine), Dr. de Coster (Belgium), Dr. G. W. Grieve (Canada), Dr. Eduardo Ferraro (Chile), Dr. F. Neumann (Czechoslovakia), Mr. A. T. Pitts (Great Britain), Dr. J. Quintero (France), Dr. Körbitz (Germany), Dr. Nord (Holland), Dr. Rehák (Hungary), Mr. Friel (Irish Free State), Dr. d'Alise (Italy), Dr. Hisasho Saito (Japan), Dr. A. Puljo (Jugoslavia), Dr. R. Salazar (Peru), Mr. W. Floyd (South Africa), Dr. A. Lundström (Sweden), Dr. R. Schwarz (Switzerland), Dr. Habib Rihan (Syria), and a representative of Austria. Each of the members toasted having replied, Dr. C. A. Spahn, the Vice-President-General, gave the toast of "The Guests," and expressed the satisfaction of the members of the Congress at the presence of the Mayor and Mayoress of Westminster. He coupled with the toast the name of Prof. G. Elliot Smith, F.R.S., who had delivered an address to the Congress on evolutionary tendencies in teeth and jaws (see THE LANCET, July 25th, p. 199). Prof. Elliot Smith expressed on behalf of the guests their appreciation of the generous hospitality shown to them.

A reception to the members of the Congress was given by the President and Council of the Royal College of Surgeons. The guests were welcomed by Sir Holburt Waring and Mr. Sampson Handley, in the absence of Lord Moynihan. An address on Deformities and Fashion was given by Sir Arthur Keith, and the Odontological Museum was described by the Curator, Sir Frank Colyer.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

HOSPITALS AND THE LOCAL AUTHORITIES.

THE undertaking by various hospitals to carry out for local authorities the treatment advised by school medical inspectors is causing embarrassing situations. When the various arrangements were made it does not seem that due attention was paid to the propriety of an income limit being imposed as regards those who were to obtain treatment at the special rates. It has happened, therefore, that although the local authority is able to recover the cost of treatment of school-children in cases where the parents are well-to-do, the hospitals receive the same payment as in the case of the poor, while the medical staffs receive either no fee or a merely nominal fee. In many cases the children treated are of a class which could, and should, pay for treatment at ordinary professional rates, and their treatment in a public or charitable hospital is an abuse of the functions of such an institution.

A difference of opinion of some importance in this respect has arisen in Cork. It appears that the Cork district hospital has for some time been carrying out the treatment of children sent by the school medical officers of the city, under a scheme arranged between the hospital authorities and its medical staff. In this scheme an income limit of £4 a week for parents of the children to be treated had been agreed on, and so far no difficulty had arisen. Recently, however, it was proposed to treat children from the county of Cork under a similar scheme, but the members of the medical staff found themselves unable to agree to as high an income limit for country patients as for city patients. As a result Dr. G. A. Barter, who is ophthalmic surgeon to the Cork district hospital, has refused to treat well-to-do patients from the country as part of his duty. The Department of Local Government and Public Health thereupon instructed the South Cork board of public assistance (the authority in charge of the district hospital) to call for Dr. Barter's resignation, and the board has passed a resolution to that effect.

The legality of any attempt to dismiss a medical officer for refusing to perform duties not contemplated in the terms of appointment is questioned, but, apart from the legal point, it is clear that the whole issue raised requires more serious consideration than it has received. The hasty action of the Department of Local Government and Public Health is specially unfortunate, and is in contrast with its usual habit of prudent deliberation.

THE HOSPITALS AND THE SWEEPSTAKES.

The Governors of the Rotunda Hospital, after much deliberation and by a majority, have decided to apply for a share in the next sweepstake. One may assume that the governors do not like sweepstakes as a method of financing hospitals, or they would long ago have applied for participation. Their action now is almost under the compulsion of necessity. The hospitals which have hitherto participated, as well as those which have hitherto stood out, are coming to realise that the old method of financing hospitals by voluntary subscriptions is obsolescent, if not obsolete. The well-to-do, when asked to subscribe, have a ready answer. If the appeal is on behalf of a hospital which has benefited by the sweepstakes, the answer is, "You do not need further help." On the other hand, if the appeal is on behalf of a hospital which has not participated, the answer is, "Go into the sweepstakes and you will have plenty!" In neither case is the answer a true one, but it serves. Whether the voluntary system died of itself, or was killed by the sweepstakes, is a matter not easy to decide. A practical problem remains nevertheless. The sweepstakes cannot be more than a temporary expedient. What is going to be the means of future support of the hospitals? Those who introduced the sweepstakes claimed that they were preserving the voluntary system, and avoiding the necessity for State support and State control. It looks now as if they were providing the bridge between the voluntary system and nationalisation.

TESTIMONIAL TO PROF. THOMAS SINCLAIR.

A number of friends, colleagues, and pupils of Colonel Thomas Sinclair, emeritus professor of surgery in the Queen's University of Belfast, have thought it appropriate that some public recognition should be made of the distinguished services which he has rendered to that University and to the Belfast Medical School. Prof. Sinclair became professor of surgery in 1886, and occupied that chair for 37 years. He may justly be regarded as the founder of modern surgery in Ulster. Since his resignation in 1923 he has represented the University in the Imperial Parliament, and has acted as registrar and pro-

chancellor of the University. He has also served as a member of the Senate in the Parliament of Northern Ireland. It has been found impossible to notify personally all the former students of Prof. Sinclair, many of whom, doubtless, would wish to share in this testimonial. Subscriptions (maximum 2 guineas) will be received by the Rt. Hon. Samuel Cunningham, 3, Donegall Square East, Belfast.

RESIDENT MEDICAL OFFICER IN A PUBLIC SCHOOL.

The governors of the Campbell College, Belfast, are to be congratulated on being the first board of any public school in Ireland to appoint a whole-time resident medical officer to look after the health of the boarders and day boys, and the hygiene of the school. Dr. Jenkins, who has been selected from many applicants, is a former captain of the St. Bartholomew's Rugby football team, and played also for the United Hospitals and Middlesex County. He has also for a period had experience of medical school work at Rugby.

Old Campbellians will regret the retirement of Dr. R. W. Leslie as medical officer to the school, a post he held for 35 years. He attended medically many of the fathers, when boys at Campbell, who have now sons at the school.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

A CHAIR OF CHILD LIFE AND HEALTH.

THE Edinburgh University court have appointed Dr. Charles McNeil to the Edward Clark chair of child life and health. The establishment of this new chair has been generally welcomed and the new professor comes to it with a fine record. He took up the special study of children with the late Dr. John Thomson and succeeded him as senior physician to the Royal Hospital for Sick Children. He is also university lecturer on diseases of childhood. During the war he was in charge of the Scottish Hospital at Rouen from October, 1915.

THE ROYAL COLLEGE OF PHYSICIANS' LABORATORY.

At the last quarterly meeting of the Royal College of Physicians of Edinburgh, Sir Robert Philip, curator of the laboratory, was able to present a valuable report on the work of the past year. Lieut.-Colonel A. G. McKendrick, the superintendent, and 18 fellow-workers, have been engaged in 23 investigations of pathological, bacteriological, chemical, and mathematical problems. In their studies of epidemics Colonel McKendrick and Mr. Kermack deal with the fluctuations superimposed on endemic disease by an influx of fresh individuals by birth or immigration at a constant rate. They have also analysed the epidemiology of kala-azar on data submitted from India. They find that the chance of a household becoming infected increases with the number of its members, but that individual chances of infection are *less* in larger households than in small ones. They have aimed at obtaining a quantitative relation between the chance of an individual becoming infected and the size of the household. The results are consistent with the theory that kala-azar is spread by the sand-fly, but need further investigation. The superintendent has also published a statistical review of antirabic treatment, the work being undertaken at the instance of the Health Section of the League of Nations.

In an investigation of cancer of the breast, carried out in association with the late Prof. J. Lorrain Smith, Mrs. Dawson has made an extended histological study of the normal breast during various phases of growth and activity. The malignant process does not appear to originate in the fully developed epithelial cells lining the acini of lactation, but usually in the epithelium of the small terminal ducts from which secreting acinar epithelium is itself derived. Lieut.-Colonel W. F. Harvey and Mr. Hamilton continue their research on cellular response to irritants and Lieut.-Colonel W. Glen Liston his work on hæmophilic bacteria in relation to influenza.

These and the many other inquiries summarised in the report are all of interest and, as is appropriate for a College of Physicians, they arise in the main from the materials of an active medical school and have a direct bearing on the ætiology and treatment of disease.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

B C G AT THE ACADEMY OF MEDICINE.

ON July 7th two communications were made to the Academy of Medicine on the subject of B C G. It may be remembered that the Academy nominated in February of this year a commission to inquire into certain matters concerning B C G. In a preliminary report this commission has presented the following conclusions with regard to one aspect of its researches, —the harmlessness of B C G: "There is no authentic case," it says, "in which B C G, given to an infant by the mouth or subcutaneously, has become changed and provoked virulent tuberculous lesions. In the great majority of cases B C G is well tolerated by the new-born infant, producing no disturbances, and in no way hampering the development of the infant. Only occasionally, transitory and slight incidents, the most frequent of which is polyadenitis, have been seen to follow the vaccination. These incidents are of the same kind as those observed as a sequel to all sorts of vaccination. The commission recalls the injunction that vaccination of the new-born infant in infectious surroundings should be supplemented by its removal from all tuberculous contagion for at least six weeks from the date of birth."

The second communication on B C G was made by Dr. G. Kern, who has made a statistical study of the infant mortality in the district of Thann (Haut-Rhin) the stationary character of whose population, half industrial and half agricultural, has enabled him to avoid at least one pitfall of a health survey. During the years 1927–30 inclusive there were 5080 births in this district, and 1698, or 33·4 per cent., of the infants were vaccinated with B C G. In 1929, as great a proportion as 49·1 per cent. of the infants born in this year were thus vaccinated; in 1930 this proportion fell to 42·3 per cent. on account of polemical publications in the newspapers. During these four years the deaths from all causes during the first 12 months of life were relatively much more numerous among the non-vaccinated controls, for whom the mortality was 10·54 per cent., whereas it was only 4·76 per cent. for the vaccinated. In no case had the vaccination given rise to any pathological incident or interfered with the growth of the child. With the growing respect which the professional statistician infuses into the bosom of the ordinary mortal, Dr.

Kern has invoked the aid of Monsieur Moine, the expert statistician of the *Comité National de Défense contre la Tuberculose*, who has verified the above figures.

OVERCROWDING OF THE MEDICAL PROFESSION.

The commission recently appointed by the Academy of Medicine to study the overcrowding of the medical profession in France has begun most logically by asking itself whether the problem it has been set to solve actually exists. It has come to the conclusion, quite emphatically, that it does. It has also come to the conclusion that this overcrowding is really due in great part to the ease with which foreigners can obtain a medical degree in France. The commission is, accordingly, in favour of the Armbruster Bill, which has already passed the first reading in the Senate and which lays down certain restrictions to the entrance of foreigners into the ranks of the medical profession in France. These restrictions are such that the foreigner who wishes to practise medicine in France will have to pass the same tests and undertake the same obligations as a Frenchman—i.e., he will have to obtain the French "baccalauréat" and become a naturalised Frenchman and be subject to military service. It is, however, suggested that the privileges accorded to Rumania in this particular field should not be withdrawn. At present some six or seven Rumanians settle every year in France to practise medicine, and it has been suggested that Rumania should henceforth be rationed with the generous quota of some 12 to 15 medical degrees a year.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

THE RECOGNITION OF METHYL-ALCOHOL.

THE controversy as to the danger of inhaling fumes of methyl-alcohol may not be settled, but it may perhaps be admitted that in this land of prohibition the main danger of employing methanol as an anti-freeze is that it will be drunk. The United States Public Health Service, anxious that no one shall have a legitimate excuse for this error, has come to an agreement with the manufacturers, by which methanol antifreeze will be coloured a uniform shade of methyl violet, and be made distasteful by chemical additions. Its container is to bear a warning label of specified design.

DROWNING ACCIDENTS.

Official and voluntary health organisations, including the American Red Cross, are now busy with the summer campaign for the prevention of drowning. When a death by drowning occurs during a "heat wave" it is usually used by the newspapers to swell the total of deaths attributed to heat. But, as a matter of fact, the seasonal loss from drowning is a heavy one, heat wave or none. In the last ten years the total deaths from drowning have risen by irregular stages from 5000 to 7000. About half of this mortality is recorded in June, July, and August. Examination of the statistics by age-groups reveals that the heaviest sufferers are youths from 15 to 19; the next heaviest, children from 10 to 14. More than half of these deaths occur before the age of 25.

CHLORAMINES IN WATER PURIFICATION.

Ths use of chlorine as a disinfectant in municipal water-supplies has given great satisfaction in a large number of American cities and is now almost standard practice. However, it has had one drawback: in the presence of even minute traces of phenolic waste chlorine gives rise to an exceedingly disagreeable taste. A new treatment has recently been introduced in which ammonia is first added to the water-supply and then chlorine, so that chloramines become the active disinfectant. The disinfection is not as rapid as with chlorine alone but chloramines have certain other advantages, besides the absence of "tastes" where phenol may be present. They are not rendered chemically inert by sunlight, as chlorine is, nor do they react as readily with organic matter. As a result the disinfecting action persists longer and is a greater protection in preserving water after it has been purified and while it is lying in the distributing system. Chloramine apparatus is now put on the market by the firms that manufacture chlorinators.

ALCOHOL AS CAUSE OF AUTOMOBILE ACCIDENTS.

In his latest report the Surgeon-General of the United States Army expresses alarm at the "continued increase in unnecessary deaths from automobiles." He points out that last year these were responsible for 76 per cent. more deaths in the army than any other one cause. All but 11 of the deaths occurred in privately owned cars. In 54 cases the deceased were on pass, in 11 on duty, and in four on trips with athletic teams, in three cases the status is not known. Mechanical defects in the car were responsible in only four cases. "In a very large percentage of cases the accidents clearly occurred as the result of faulty driving . . . and unfortunately too often the driver was partially intoxicated."

SUCCESS IN EARLY TREATMENT OF CANCER.

Results published by the New York State Institute for the Study of Malignant Diseases show that out of a total of 1229 cases, 307, or about 25 per cent., remained well five years or more after treatment. In the majority, of course, the condition was advanced at the time of treatment. Among the cases classified as early were 65 cancers of the lip, of which 47 were well after five years; 14 cancers of the uterus, of which nine were well after five years; and 60 cancers of the breast, of which 34 were well after five years. The best results have been obtained with the basal cell epitheliomas.

A DIAGNOSTIC TEST FOR CANCER ?

Two months ago [1] we commented on the highly technical work in which Dr. S. G. T. Bendien had given an account of specific changes in the blood serum, which he claimed to have discovered in disease, especially in cancer and tuberculosis. In connexion with this work the following statement has appeared in the lay press, as having been issued by the British Empire Cancer Campaign.

On learning of the claim by Dr. Bendien, of Zeist, Holland, that he had discovered a method of diagnosing cancer by examination of the blood, the British Empire Cancer Campaign, following its regular procedure, instituted inquiries. As a result it was decided in agreement with Dr. Bendien to put the matter to a test. Samples of blood were taken from 38 persons, some cancerous (as determined by microscopic examination). These samples of blood were taken in London by a physician on the staff of a large London hospital and the test-tubes containing the samples were numbered. The numbers and corresponding diagnoses

[1] See THE LANCET, 1931, i., 1096.

were entered on a sheet of paper and placed in a sealed envelope. The samples of blood and the sealed envelope were then conveyed by Dr. Piney, scientific secretary of the investigation committee of the campaign, to Dr. Bendien's laboratory. Dr. Piney himself was unaware of the diagnoses and was present throughout the entire test.

Twenty-one specimens were tested—five were taken from cancerous patients, two from normal people, and fourteen from patients with other diseases. Dr. Bendien correctly diagnosed the five specimens known to be from cancerous patients and the two taken from normal individuals. In addition, he diagnosed one of the remainder as cancerous. Further investigation of this case in London has proved that his diagnosis was also correct in this case.

The above is a short statement of the facts, but the British Empire Cancer Campaign feels it necessary in the public interest to make the following comments:—

1. The discovery of Dr. Bendien appears to mark definite advance in cancer research in respect of the aid it brings to diagnosis of cancer, but some time must elapse before the full value of the method can be obtained.

2. It is important to lay emphasis on the fact that this blood test is for diagnosis and for diagnosis alone.

It is obvious that this preliminary test is not adequate to establish a method of diagnosis, and that a much larger series of tests, not only on the serums of patients with cancer, but also of patients suffering from a variety of other diseases, will have to be made.

DRUGS, SURGICAL INSTRUMENTS, APPLIANCES, AND FOODS.

B.M.A. EXHIBITION AT EASTBOURNE.

THE usual trade exhibit was opened at Devonshire Park on July 21st by the President-Elect, Dr. W. G. Willoughby. It was housed in a temporary building specially erected for the purpose and, despite the depression through which trade is passing, there was a goodly display of both new and well-tried products and devices. Only a few items can be picked out for mention from each stand.

Drugs and Pharmaceutical Preparations.

1. GENERAL DRUG EXHIBITS.

[60 and 68] Allen and Hanburys (Bethnal Green, E. 2) drew attention, among their many preparations, to Eucortone, a suprarenal cortex extract for use in Addison's disease; Byno Eugastrol, an extract of fresh hog's stomach tissue for the treatment of, pernicious anæmia; Byno Hepol, a palatable liver extract and malt preparation; I-so-gel, a sugar-free vegetable laxative, acting by absorption of fluid; and Euvalerol elixirs, containing valerian.—[30] Armour and Co., Ltd. (Armour House, St. Martin's-le-Grand, E.C. 1), showed their well-known Glanoid gland preparations, and also a concentrated fluid extract of liver; a new calves'-foot jelly; Chymol, a nutritive, and invalid beef preparations.—[72] Bayer Products, Ltd. (19, St. Dunstan's Hill, E.C.3), attracted the visitor's attention by a blue and silver stand on which were displayed the latest results of their research work; for example, Lacarnol, a nucleosid extract said to have a remarkable effect on the coronary arteries in angina; Elityran, a new thyroid preparation accurately standardised by its weight-reducing properties in guinea-pigs; and Abrodil, an iodine medium for excretion pyelography; the well-known Avertin, Luminal, and Novalgin were also shown.—[62] Boots Pure Drug Co., Ltd. (Nottingham), showed a range of drugs, including Acriflavine, in sterile solution, powder, emulsion and solution tablets; Lederle's Anti-pneumococcus serum; Hexyl-resorcinol, Insulin, liver extract, and a highly concentrated fluid extract of fresh liver, and Stabilarsan and Sulphostab.—[54] British Colloids, Ltd. (Gorst-road, Park Royal, N.W.10), had their well-known Collosol preparations on view, among the newest being Tetanol, a Collosol calcium put up with vitamin D, for oral use—the calcium for injection being prepared without the vitamin, as vitamin is not absorbed by this route; preparations of iron with copper, notably collosol "F.C.V.D.," a combination of collosol ferrum and collosol cuprum with malt extract and irradiated ergosterol, copper having been shown fto activate other metals; and Colsul, 1 per cent. sulphur, now supplied in aqueous solution to avoid the pain caused by oil injections. Their collosol tannic sprayed adaptor has been designed especially for the rapid application of tannic acid to burns. [83] The British Drug Houses, Ltd. (Graham-street, City-road, N.1), showed a number of new products among theirmany well-known ones; Avoleum is a highly concentrated and standardised solution of vitamin A alone; Carotene is available in sugar-coated pellets, each containing 2 mg.; Livogen is a potent liver extract put up with hæmoglobin and vitamin B for secondary anæmias; Gaster Siccata B.D.H. is a stomach preparation resembling a dried milk; the B.D.H. ureamometer outfit furnishes a simple clinical apparatus for estimating blood-urea from a single drop.—[57] Burroughs Wellcome and Co., Ltd. (Snow Hill Buildings, E.C. 1), had, as usual, an attractive stand to display their tabloid, soloid, hypoloid and other products; an illuminated pyramid indicated the modern treatment of rickets, asthma, cardiac conditions and certain obstetric emergencies, and Kepler cod-liver oil with malt extract was recommended for rickets; Ephedrine, Diginutin, and Infundin are well known, but Tabloid carotene was here exhibited for the first time.—[11] Reed and Carnrick (distributing agents: Coates and Cooper, Ltd., 41, Great Tower-street, E.C. 3) displayed their gland preparations, drawing special attention to Nephritin, composed of cortex and convoluted cubules and used in acute nephritis; Ovacoids, containing entire ovary and anterior pituitary; Endomin, a kind of synthetic liver preparation containing all the known metallic compounds in liver ash; Thyracoids, a new biologically standardised iodothyroglobulin, and Brosedan, a bromide-yeast preparation.—[33] Evans, Sons, Lescher and Webb, Ltd. (56, Hanover-street, Liverpool, and 50, Bartholomew Close, E.C. 1), demonstrated the various specialities manufactured in their research laboratories, particularly an extract of suprarenal cortex; Hepatex, P.A.F., a solution of the liver fraction specific in pernicious anæmia, for injection; Hepovite, a compound elixir of hepatex; and Ephregel Nasal Jelly, a combination of ephedrine and adrenalin with analgesics and aromatics.—[44] C. J. Hewlett and Son, Ltd. (35–42, Charlotte-street, and 83–85, Curtain-road, E.C. 4), in addition to their old favourites Mist. Pepsinæ co. c. Bismutho and Liq. Ergotæ Purif., showed Hepatagen, an aperient and cholagogue; Veronigen, a barbitone hypnotic; and also useful general practitioner's and midwifery bags containing all essential equipment in an easily accessible arrangement.—[69] Hoffmann-la Roche Chemical Works, Ltd. (51, Bowes-road, N. 13), showed their well-known sedative preparations, of which Allonal and Sedormid were taken up Mount Kamet on the recent expedition, for the insomnia of heights; the handy Tubonic ampoule-syringes once more attracted interest.—[4] May and Baker, Ltd. (Battersea, S.W. 11), had many products on view, notably their preparations for venereal disease—"914" and others; Propidex, an ointment containing a mixed vaccine of streptococci, staphylococci, and *B. pyocyaneus*, for local vaccine therapy; Planocaine, a local anæsthetic less toxic than cocaine; magnesium hyposulphite in ampoules and tablets, for allergic conditions; Neptal, an organic mercurial diuretic; and Duracaine.—[76] Oppenheimer, Son, and Co., Ltd. (Handforth Laboratories, Clapham-road, S.W. 9), showed their familiar Palatinoids, Bipalatinoids, and Pulverettes, and also Dimol; Cocoids—tiny chocolate tablets for children—and Roboleine, the popular reconstructive food.—

[59] Parke, Davis and Co. (50, Beak-street, W. 1) stressed their new preparations of ovarian and pituitary extracts, demonstrating by means of illuminated slides the œstrus stages as produced in the course of standardisation of their product Theelin, the crystalline ovarian follicular hormone isolated by Doisy; they also showed Ventriculin, a desiccated stomach extract clinically tested before release; and antipneumococcus serum (Felton), representing types I. and II., and having a very small protein content.—[14] Reynolds and Branson, Ltd. (Leeds), drew special attention to vaccines for rheumatism prepared by Dr. H. Warren Crowe, and other vaccines prepared by the Yorkshire Pathological Laboratories.—[81] The Sandoz Chemical Works (5, Wigmore-street, W.1), together with the familiar Allisatin, Calcium-Sandoz, Felamine, Femergin, and Ipecopan, showed Optalidon, a new analgesic, and Panthesine Brand Balm, which relieves local pain and irritation.—[73] Schering, Ltd. (3, Lloyd's-avenue, E.C.3), besides old and tried compounds such as Veronal, Medinal and Atropin, showed Neotropin, a new urinary antiseptic and general internal disinfectant, effective in either acid or alkaline medium; Progynon, a concentrated female sex hormone, biologically standardised by the method of Allen and Doisy; Solganal and Solganal B, gold products of low toxicity; and Synthalin.

2. SPECIAL DRUG PREPARATIONS.

[48] Bemax Sales, Ltd. (23, Upper Mall, W. 6), showed their well-known vitamin B preparation in a new form: a chocolate containing 20 per cent. of Bemax made up with crushed dates.—[70] Bisodol, Ltd. (12, Chenies-street, W.C. 1), showed their antacid and digestive product.—[15] W. Bredt, Ltd. (38, Great Tower street, E.C. 3), displayed Quadronal, an analgesic composed of antipyrin, caffeine, phenacetin and lactophenin; and Quadro-nox, a hypnotic composed of veronal with quadronal but without the caffeine; also Recresal, a new phosphorus tonic; and reminded visitors of their Thilocologne for general and local anæsthesia.—[56] Bristol-Myers Co. (112, Cheapside, E.C. 2) exhibited sal hepatica, an effervescing saline; Ipana tooth paste; and Ziratol, a hæmostatic antiseptic.—[67] The Inhaling Drug and Apparatus Co., Ltd. (Windsor House, Victoria-street, S.W. 1), demonstrated the Apneu nebulising and inhaling apparatus for the administration of many kinds of drugs, particularly for use in asthma and emphysema.—[53] Kaylene, Ltd. (Waterloo-road, N.W. 2), showed the well-tried kaylene and kaylene-ol for gastro-intestinal infections.—[46 and 47] Petrolagar Laboratories, Ltd. (Braydon-road, N. 16), reminded practitioners of the value of their three brands of paraffin emulsion—plain, alkaline, and with phenolphthalein; and introduced Neobovinine 20, a new liver product for which no contra-indications are known, composed of liver extract and beef blood and containing the mineral elements active in building up hæmoglobin.—[36] Pyorrhosol, Ltd. (165–7, Waterloo-road, S.E. 1), introduced the all-British antiseptic Pyorrhosol, primarily used for pyorrhœa and also for gynæcological conditions, incipient colds, and sore throats. It is a preparation of phenol sulphate-iodum-timol-carbonate-acetanilide-sod-benzoate, combined with flavine in sterilised seawater.—[77] The Saccharin Corporation, Ltd. (72, Oxford-street, W. 1), showed Novocain; Glaucosan, for the treatment of glaucoma; and Trivalin, the substitute for morphine.—[82] Scott and Turner, Ltd. (211, Blackfriars-road, E.C.), kept Andrew's liver salt before the public notice as a pleasant and gently corrective saline aperient.

Food and Beverages.

[37] The Bantam Products, Ltd. (Bantan Works, Leeds), showed their pure coffee powder, from which a refreshing drink can be made, either hot or cold, with great ease and rapidity.—[78] Cow and Gate, Ltd. (Cow and Gate House, Guildford, Surrey), stressed the digestible pinhead curd obtained from their full-cream milk, and the value of Peptalac, a full-cream milk and wheat flour, predigested in the laboratory under precise and sterile conditions, and introduced Chocolate Milk as a nourishing and sedative drink.—[51] Energen Foods Co. (Willesden, N.W. 10), showed their special dietetic and diabetic preparations, and announced the production of a new breakfast food, Strength of Wheat, in the autumn.—[20] Fassett and Johnson, Ltd. (86, Clerkenwell-road, E.C.), attracted attention to their well-known Angier's Emulsion, Argyrol, California Syrup of Figs and Naturalax by dispensing refreshing drinks of Mission orange and grape-fruit juices, which are made on the spot from sun-ripened fruits.—[22] The stall of William Gaymer and Son, Ltd. (Attleborough and London) was, as usual, visited by everybody for a glass of their delicious cider.—[74] Glaxo Laboratories (56, Osnaburgh-street, N.W. 1), in addition to the foods which have made their name famous, showed Ostelin Vitamin D Liquid; anti-virus preparations; and Glucose D—a 98 per cent. medicinal glucose combined with Ostelin Vitamin D, for the many cases where additional vitamin D is needed as well as glucose.—[58] H. A. G. Coffee Co., Ltd. (40, Theobalds-road, W.C. 1), gave all comers the opportunity to taste their coffee preparations, from which 90 per cent. of the caffein is removed, and showed models illustrating the action of caffein on the human system.—[55] Ingram and Royle, Ltd. (45, Belvedere-road, S.E. 1), were again present to represent the bottled waters of many foreign spas, including Vichy, Contrexéville, Évian, Carlsbad and Hunyadi Janos.—[66] Maison Ackerman-Laurance (St. Hilaire-St., Florent, France) rivalled Gaymer's as the most popular stand in the show by dispensing Brut-Royal sparkling saumurs and cocktails made with Cinzano vermouth.—[17] Montgomerie and Co., Ltd. (Ibrox, Glasgow), showed Berina foods and malted milk, and specially mentioned their value for premature infants and the gastritis of adults.—[45] Nestlé and Anglo-Swiss Condensed Milk Co. (6 and 8, Eastcheap, E.C. 3) drew attention to Lactogen—a balanced diet for infants made by the roller process and containing very small fat globules, and to the familiar milk, milk food and cream that bear their name.—[28] Oxo, Ltd. (Thames House, Queen-street-place, E.C. 4), showed the well-known Oxo, Lemco, Hospital Oxo and Oxoid gland preparations, particularly Oxoid brand vitamin A, and Liveroid, a palatable liver preparation.—[7] Alexander Riddle and Co., Ltd. (Bancroft-road, E. 1), offered to the thirsty, Stower's lime juice and lemon and orange squashes as cheap, palatable, and healthy beverages.—[79] Virol, Ltd. (Hanger-lane, Ealing, W. 5), needed no introduction for Virol, Virol and Milk, and Virolax.

(To be continued.)

A "STADIUM" HOSPITAL BED. — Sir Joseph Broodbank, the treasurer, last week unveiled at Poplar Hospital a tablet over a bed endowed by the West Ham Stadium. It was stated that the cost, £1000, had been contributed by "greyhound owners, boxers, jockeys, footballers, and dirt-track riders."

HOSPITALS AND ROAD ACCIDENTS.—Sheffie'd Royal Hospital has received only £16 15*s.* in response to claims for treatment of 96 motor accident cases, which have cost this hospital £752 during the first six months of the present year. These patients spent 1672 days in the hospital. There were 439 traffic accidents during the half-year. On June 30th the hospital owed the bank £56,656, an increase of over £3000 in 12 months.

BECCLES HOSPITAL.—The annual report of the Beccles and District War Memorial Hospital states the proportionate sources of its income. Each shilling is made up as follows: Patients' payments, 5*d.*; contributory scheme, 3½*d.*; subscriptions, 2*d.*; investments, 1½*d.* The ordinary income of £2795 left a credit balance on last year's working of £110. There were 242 new in-patients; out-patients' attendances showed the large increase of 2100, the total being 4800. The weekly cost of each in-patient was £2 8*s.* 1*d.*

CORRESPONDENCE

BACTERIOLOGICAL CONTROL OF MILK SUPPLIES.

To the Editor of THE LANCET.

SIR,—All those interested in the production and control of clean milk will welcome the illuminating contribution made to THE LANCET on July 18th by Prof. McIntosh and Dr. Whitby. The striking difference that they have found between the bacterial counts on such media as common nutrient agar and the officially recommended Lemco agar, and their demonstration of the inability of the latter medium to provide for the development of certain organisms which may be present in large numbers in pasteurised milk render it yet more clear that the present methods of grading should be revised. So urgent has this necessity become that the London School of Hygiene and Tropical Medicine some months ago applied to the Empire Marketing Board for a grant to enable a thorough investigation to be carried out into the technical grading of milk. This application was approved by the Board, and work is about to commence on the problem. Pending any possible alteration in the official standards it might be well to point out that until a change is made in the method of grading it is imperative that all samples of designated milk should be examined strictly according to the technique which has been officially recommended by the Ministry of Health. It is on this technique that the different grades have been based and that the liability of the producers of designated milks has been formulated. Any departure from the official recommendations is certain to result in considerable confusion.

I am, Sir, yours faithfully,

W. W. JAMESON.

Keppel-street (Gower-street), W.C., July 24th, 1931.

To the Editor of THE LANCET.

SIR,—It has for long been recognised among bacteriologists who examine many samples of milk that the official methods of examination are inadequate, and there will be ample corroboration of the findings of Drs. McIntosh and Whitby. Our experience is in entire agreement that the use of a richer agar for the bacterial enumeration is desirable, and milk produced under cleanly conditions can, even then, readily attain the prescribed standards. We will go further and say that with reasonable care it is possible for ordinary raw, ungraded milk to pass the agar count standard set for Grade A Milk, and we think that the standard for this grade of milk should now be made more stringent. There is no official ruling concerning the method of counting—namely, by naked eye or by use of a lens. This is an omission of some importance, and we favour the use of a lens of 2½ in. focal length. The test for *Bacillus coli* also requires revision for, whilst the absence of acid and gas production in the lactose medium is generally conclusive, a positive result is much less valuable and may be due to organisms having no relation to the colon group, even considered in its widest sense. We, too, have frequently found the pasteurised milk supplied by reputable firms to contain excessive numbers of viable bacteria, and have also known such products to sour and clot within 12 hours of delivery. The phenomenon noted by Drs. McIntosh and Whitby, of an increased count after pasteurisation, coincides with our experience. In these cases there is usually an altered bacterial flora, the colonies from the pasteurised milk being predominantly pin-pint growths of Gram-positive thermophilic bacilli which, on the official agar, fail to be visible after two days' incubation at 37° C.

The problem of thermophiles and the lactose-fermenting thermoduric streptococcus (enterococcus) is one that seriously concerns ice-cream as well as milk. Pasteurisation is to-day employed on a large scale in the manufacture of ice-cream, and frequently it is possible to obtain viable thermoduric streptococci from as little as 0·0001 c.cm. of an ice-cream known to have been manufactured from raw products of the highest quality, and under the cleanest possible conditions.

The implantation of thermophiles in an ice-cream manufacturing plant is likely to become, as Prof. McIntosh and Dr. Whitby have found in the case of a milk pasteurising plant, a chronic nuisance, which only the most thorough and frequent cleansing will avoid.

We think that the work of Prof. McIntosh and Dr. Whitby emphasises the need, which has long been felt, for a complete revision of the whole question of milk and milk products, their methods of examination and standards of bacterial purity.

We are, Sir, yours faithfully,

JOHN F. BEALE, M.A., M.R.C.S., D.P.H.,
E. V. SUCKLING, M.B., B.S., D.P.H.

Queen Victoria-street, E.C., July 22nd, 1931.

RECOVERY FROM STREPTOCOCCAL SEPTICÆMIA.

To the Editor of THE LANCET.

SIR,—Dr. Burton's criticisms are largely answered in the text of the paper by myself and Dr. Smith. He states that he cannot accept our private series as parallel with our hospital series. They were, however, unselected cases seen consecutively in private practice during an approximately similar period of time. He regards our total series, quite reasonably, as of no statistical value, and yet utilises the figures of the adverse hospital group *by themselves* and without mentioning that a quarter of these were cases of other grave disease in which the septicæmia was a terminal event. He objects that the streptococcus, when isolated, was not typed, but does not make allowance for the fact that the majority of these cases were seen during the last ten years and in a period before the possible practical utility of routine typing had been recognised by pathologists. Our conclusions with regard to serum were mainly in respect of the ordinary polyvalent sera; while they throw doubt on the efficacy of these they in no wise oppose the attempt to improve serum therapy by an extended inquiry into bacterial types and the use of antitoxic and type sera. On the contrary, we suggest the employment of various brands of sera, and specifically urge that "we require to know more about the types of streptococcus concerned." On the basis of a considerable experience of streptococcal fevers during and since the war we have mentioned four symptoms which may, individually or collectively, help in the clinical recognition of some hæmolytic infections. Because he has not

encountered the syndrome, Dr. Burton doubts its value. Dicrotism and rose-spots are not invariably present in typhoid fever, but no one would dispute that they are valuable as clinical evidence and that they may lead to appropriate investigation and accurate diagnosis. Diagnosis must always be clinical in the first instance and blood culture is not an infallible nor always the quickest arbiter in septicæmic states. Since our paper was written I have seen two cases of fever in which experienced colleagues suggested a diagnosis of pneumococcal septicæmia; in each case this syndrome persuaded me correctly in favour of a streptococcal infection twenty-four hours before the laboratory report was received. In one case the organism was hæmolytic. In the other *Streptococcus longus* was reported; its properties were not further tested, but the anæmic condition of the patient, with hæmoglobin down to 50 per cent., left little doubt that hæmolysis was taking place. Dr. Burton's letter would seem to imply that our attempt to amplify the clinical picture of streptococcal septicæmia was also an attempt to discourage the application of laboratory tests. In point of fact we insist in our paper on the importance of early blood culture in every suspicious fever and of repeated blood cultures during the illness in certain instances.

Briefly, Dr. Burton and I are in no disagreement with regard to aims, and the paper by myself and Dr. Smith actually lends strong support to his own plea for fuller inquiry. Unless, however, this inquiry (in addition to bacteriological and serological studies) takes full count of the variability of the streptococcal fevers, of their symptomatology, of the distinctions between benign bacteriæmic and grave septicæmic states, and is cautious in the establishment of standards for judging the efficacy of sera, the therapeutics of these diseases will not be materially advanced.

I am, Sir, yours faithfully,

Wimpole-street, W., July 27th, 1931. J. A. RYLE.

MIDWIFERY IN GENERAL PRACTICE.

To the Editor of THE LANCET.

SIR,—After reading the special article by Prof. Munro Kerr and Dr. Sharman in your last issue, I feel compelled to express a conviction that has been growing stronger and stronger the last ten years.

The medical press and the popular press are failing completely in any forceful propaganda to combat maternal mortality.

Prof. Kerr laments that only a quarter of his cases ever received antenatal treatment, and believes that if it had been much greater his mortality and morbidity figures would have been much less. It is probably impertinence on my part to agree with him, but I do so, whole-heartedly. I mentioned the last ten years. In 1921, after acting as "district resident" at Queen Charlotte's Hospital I went to practise in the East End of London. I was brimful of antenatalism, and I found my colleagues booking maternity cases and saying, "Well, you know where to find me when the time comes." I started doing antenatal work with my cases, and I found all the mothers (and grandmothers) very sullen in their attitude. This had not been done to them before (nor to their grandmothers), and my reception was very cool indeed. Well, in nine years things were very different, and I heard of one of my colleagues being *asked* to come and examine an expectant mother.

In 1929, for family reasons, I left the East End and settled in a small country town in Worcestershire. And what astounds and depresses me is that I am faced here in 1931 (in the same class of people) with the same hinderances to antenatal work that I found in London in 1921. I have to begin afresh to carry out the ideas I learned at Queen Charlotte's ten years ago, and again it is going to take time. And this experience of mine and the conclusions Prof. Munro Kerr draws from his article completely convince me that as an obstetrical profession we have been asleep during the last ten years in our education of the expectant mother (and her mother *and* grandmother). What we need is a paid publicity agent to *exploit* antenatal treatment; in the newspapers, on the pictures, and *on the wireless*. How little, sometimes, we can do, unless we get the expectant mother from the word "Go."

One other point in the consideration of everyday midwifery in the homes of the people—i.e., the mothers. It is the case (as I have found it) that the more practice a general practitioner has had in midwifery (also, I admit, the older he grows) the less of that kind of work he will undertake. "Yes, I think I have done my share. Some weeks I have never been in my bed. Let the youngsters take their share of it"—i.e., the junior partners and assistants. And so an experienced and successful man is lost to the art once more and an apprentice tries his hand (as we all did). Now I feel there is something radically wrong here, and it is so obvious that I need not enlarge. But—does a proved artist in the drama or architecture, in music or painting, take up such an attitude? Surely there is something vitally wrong in the arrangement of our midwifery work when valuable men are allowed to fall out. The loss to our maternity safety is incalculable.

I am, Sir, yours faithfully,

July 24th, 1931. WORCESTERSHIRE G.P.

A CODE OF CHILD NURTURE.

To the Editor of THE LANCET.

SIR,—In "The Highways Code" issued by the Ministry of Transport to all motorists we have an example of mass education which cannot fail to diminish loss of life due solely to ignorance and want of care. But compared with the forty thousand deaths annually of children under one year of age, and the still more appalling damage-rate obtaining in children of school age and in young adults, the mortality- and damage-rate due to road accidents is a mere trifle. That the greater proportion of these deaths and this damage is due to ignorance and want of informed care on the part of parents no one will dispute. I would suggest that the Ministry of Health follow the example set by their colleagues and issue a Code of Instruction to every mother as soon as the birth of her child is notified.

Can it be that we, as a profession, have not yet arrived at a sufficient unanimity of opinion on the first principles of child nurture, that such a code, free from controversial matter, is outside practical politics? Have we not arrived, for instance, at sufficiently firm ground on the subject of nutrition to be able to speak with one voice? Cannot the proper authorities, therefore, give instruction on feeding, in plain, untechnical terms capable of being understood by the meanest intelligence? Clothing, ventilation, cleanliness, care of the teeth, the significance of such common symptoms as mouth breathing, "growing pains," &c.—could not these be similarly dealt with?

Such a Code of Child Rearing, revised annually so as to include every solid advance in knowledge, and placed in the hands of *every* mother, could not fail to have some influence on the status quo which has been for so long now a reproach to modern medicine.

I am, Sir, yours faithfully,

S. HENNING BELFRAGE, M.D.

Gloucester-place, W., July 25th, 1931.

*** We do not envy the task of either an individual or a committee employed on drawing up such a code.—ED. L.

DUPUYTREN'S CONTRACTURE.

To the Editor of THE LANCET.

SIR,—Dr. W. A. Trumper's letter in your issue of July 4th is interesting. I have seen a number of such cases, and am quite sure that there are at least three causes of the condition, and that they often act together—namely, certain occupations, continual flexion, and slight chronic palmar infection. I have seen such cases in gardeners, carpenters, printers, polo-players, cab-drivers, and violinists. The pathology in my opinion is vascular stasis due to constant flexion of the fingers during special types of occupation or exercise, associated with chronic slight infection from dirt and sweat creeping up the sweat ducts, or minor abrasions. Gout and heredity play a smaller part in its ætiology than in the past. I believe, too, as time goes on, that we shall see the condition occurring in the hands of motorists. Treatment by unguentum iod. denigrescens was probably efficacious on account of the increased vascularity produced which enabled the infection to be carried away, and fibrosing structures softened. On the other hand, injection of fibrolysin was given up by me years ago. The treatment advocated by Dr. Trumper in his particular case would not be beneficial in the more advanced cases for which a fasciotomy with a fine tenotome and adequate splintage by an orthopædic masseuse is indicated, or, in rarer cases, open dissection of the contracted structures.

I am, Sir, yours faithfully,

B. WHITCHURCH HOWELL, F.R.C.S.

Harley-street, W., July 28th, 1931.

PUBLIC HEALTH SERVICES

CONTENTS AND ARRANGEMENT OF M.O H. REPORTS FOR 1931.

CERTAIN alterations in the contents of annual reports of medical officers of health for 1931, and in the manner in which information is supplied, are required by the Ministry of Health (see Circular 1206). Housing statistics will be tabulated under revised headings by district medical officers of health, and need not be repeated in county reports. The minimum requirements for a report include information under the heads of statistics and social conditions of the area; general provision of health services in the area; sanitary circumstances of the area; housing; inspection and supervision of food; prevalence of, and control over, infectious and other diseases. In Appendix I. to this circular each of these heads is analysed and subdivided, the precise information required being clearly stated. For example, under the head of general provision of health services for the area the information required under "Maternity and Nursing Homes" is as follows:—

State the action taken during the year under the Nursing Homes Registration Act, 1927. Particulars should be given under the following heads, distinguishing between maternity and other nursing homes: (1) number of applications for registration; (2) number of homes registered; (3) number of orders made refusing or cancelling registration; (4) number of appeals against such orders; (5) number of cases in which such orders have been (*a*) confirmed on appeal, and (*b*) disallowed; (6) number of applications for exemption from registration; (7) number of cases in which exemption has been (*a*) granted, (*b*) withdrawn, (*c*) refused.

The report must also contain a statement of any noteworthy conditions prejudicial to the health of the area which have not been adequately dealt with in special reports; a statement of any special action taken during the year in the area to arouse public interest in the prevention of ill-health; and a summary of important special reports, if any, made during the year. The Registrar-General will continue to facilitate the preparation of the report by issuing, for inclusion therein, certain statistics specified in Appendix B to the circular. It is desirable that for the purpose of comparison with the figures for other areas, the Registrar-General's short list of deaths by causes, which is now supplied to all county borough and metropolitan borough councils should be included in the report in addition to any special local tabulation. The same applies to figures of population, births, and deaths, provided by the Registrar-General, which must be included even when figures prepared locally are also set out. For the convenience of medical officers of health the death-rates in England and Wales as a whole from cancer, tuberculosis (pulmonary and other forms), puerperal sepsis, and other puerperal causes are henceforward to be published in the Registrar-General's weekly return as soon as the necessary data are available.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 18TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 50 (last week 45); scarlet fever, 1389; diphtheria, 898; enteric fever, 73; pneumonia, 533; puerperal fever, 32; puerperal pyrexia, 98; cerebro-spinal fever, 43; acute poliomyelitis, 12; encephalitis lethargica, 13; dysentery, 8; ophthalmia neonatorum, 100. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 21st–22nd was as follows: Small-pox, 62 under treatment, 2 under observation (last week 64 and 1 respectively); scarlet fever, 1187; diphtheria, 1486; enteric fever, 16; measles, 145; whooping-cough, 412; puerperal fever, 36 (plus 10 babies); encephalitis lethargica, 207; poliomyelitis, 3; "other diseases," 125. At St Margaret's Hospital there were 14 babies (plus 1 mother) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 9 (1) from measles, 9 (2) from scarlet fever, 25 (3) from whooping-cough, 24 (3) from diphtheria, 44 (10) from diarrhœa and enteritis under two years, and 22 (2) from influenza. The figures in parenthesis are those for London itself.

Two deaths from meningococcal meningitis were registered in London, both in infants under one year of age. Two deaths from measles were reported each from Wakefield, Barnsley, and West Hartlepool. Whooping-cough caused four deaths at Liverpool and 2 each at Manchester and Hull. Four fatal cases of diphtheria were reported from Birmingham and 3 each from Ipswich and Liverpool. Diarrhœa and enteritis under two years accounted for 5 deaths at Birmingham and 3 each at Liverpool and Manchester.

The number of stillbirths notified during the week was 280 (corresponding to a rate of 41 per 1000 births), including 47 in London.

OBITUARY

BOUVERIE McDONALD, M.D., C.M. Edin.

On July 8th the death of Dr. B. F. P. McDonald occurred at his home in South Croydon. Dr. McDonald was born in Edinburgh on April 13th, 1861, being the son of Commander Samuel Pembleton McDonald. He was educated at the Edinburgh Academy and University, where he graduated M.B., C.M. in 1884, and in 1886 took his M.D. by thesis.

He held the post of resident surgeon at Leith Hospital for a time before taking up general practice in Penrith as assistant to Dr. Sanderson. In 1886 he moved to the district now known as Wallasey in Cheshire, where he rapidly established himself as a successful and popular practitioner. The district was developing fast, and Dr. McDonald took a notable part in its activities, being especially interested in the building of new houses to supply the needs of a growing population. He was soon able to take a partner and to devote himself largely to surgical work, being made honorary surgeon to the Wallasey Dispensary and to the Seacombe Cottage Hospital, which later became the Victoria Central Hospital, Liscard.

Dr. McDonald remained in Wallasey for 45 years, and during this period found time to extend his interests in many civic as well as professional directions. He was medical referee to several insurance companies, and was a prominent member of medical societies. During the war he acted as assistant company director of the British Red Cross Society. Dr. McDonald was a magistrate for Cheshire as well as for Wallasey and a member of the Cheshire County Council from 1900 to 1903. In politics he was a strong Conservative, a keen supporter of the local association and club, and one of the founders of the Wallasey branch of the Primrose League. He was returned to Parliament as the first member for the newly formed division of Wallasey in 1918. His Parliamentary duties led to his resignation from his post at the Victoria Central Hospital, but after 1922 he did not seek re-election, and was thus able to give more time to his practice.

In his youth Dr. McDonald was a good athlete, playing Rugby football and cricket. Later he took to tennis and golf as outdoor games, playing billiards and chess at home. His powerful physique and quick reactions which contributed to his skill at games also gave confidence to his patients, and they learned to rely on his judgment and good sense. On the occasion of his retirement a few years ago, Dr. McDonald was given a portrait of himself by his friends and patients, and this portrait now hangs in the Wallasey Town Hall. He leaves a widow.

Dr. Hilda Margaret Byles, of the Margaret Memorial Hospital, Hankow, who died last Saturday, belonged to a well-known Yorkshire family, and was born at Headingley, Leeds, in 1879. She studied medicine at the London School of Medicine for Women, graduated as M.B. Lond. in 1906, and left England in the following year to take charge of the hospital at Hankow, which had been founded as a memorial to Mrs. Margaret Griffith-John. A woman of great energy, she became a warm friend of the Chinese and did excellent work among them, especially in the training of Chinese nurses for obstetric work in the homes of the people.

PANEL PRACTICE

RANGE OF MEDICAL SERVICE—VARICOSE VEINS TREATMENT.

Under Article 43 (4) of the Medical Benefit Consolidated Regulations the Minister of Health has referred to referees the question whether treatment of varicose veins by intravenous injection of a sclerosing solution is within the range of medical service. The point arose on two cases from Kent and Leicestershire, and the referees heard medical witnesses in support of the Minister on one side and in support of the Kent and Leicestershire insurance committees on the other. The Minister contended that the operation was neither difficult nor dangerous to life. The committees argued the contrary, and said the result in cases of error might be the production of ulcers painful to the patient and liable to bring a valuable treatment into disrepute. The Minister contended that knowledge of the technique could be acquired from text-books and that no particular training was required either in actually administering the treatment or in judging of its advisability in a particular case; the treatment, while admittedly modern, is now so well known that a general practitioner should in a proper case be prepared to adopt it; it is not comparable with the intravenous injection for hæmorrhoids in view of the locus for the operation and the serious consequences ensuing from error. To these contentions the committees replied that there has not yet been sufficient experience of the varicose veins treatment in question to justify its inclusion in the range of medical service; that there are certain contra-indications (for example, certain types of phlebitis) which a general practitioner could not reasonably be expected to recognise; that at least as much skill is required as in the injection of salvarsan or its substitutes or in the intravenous injection for hæmorrhoids; and that practitioners over the age of 45, who are unaccustomed to intravenous injections, could not reasonably be expected to undertake the treatment.

In judging between these two sets of contradictory submissions, the referees come down on the side of the Minister. The treatment, they say, is modern but it is widely known, and the number of cases followed by ill-effects is very small. General practitioners will have the necessary skill to recognise the contra-indications, except in the rare instances which might escape even the specialist. The manipulation requires care, but not such skill or experience as general practitioners do not possess; the general practitioner would recognise cases where, owing to local or general conditions, the operation involves risk. In these latter cases he could not be required to carry out this particular treatment.

The final paragraph of the referees' findings is of general importance. The mere fact, they observe, that a treatment is comparatively new does not justify its exclusion from the range of medical service "where the technique is well recognised within the profession and does not in itself involve the exercise of special skill."

Hospital Porter as Life Governor.—Mr. A. S. Lamb, senior porter of the Essex County Hospital at Colchester, has been elected a life governor. He has been porter of the out-patients' department for 42 years, and his election is especially intended as a recognition of his efforts in collecting £105 in pence towards the cost of extending the nurses' home.

PARLIAMENTARY INTELLIGENCE

HOUSE OF COMMONS.

WEDNESDAY, JULY 22ND.

Animal Experiments.

Mr. FREEMAN asked the Home Secretary whether any application had been received or any licence had now been issued for the purpose of surgical research and experimentation upon animals at the Buckston Browne surgical research farm at Downe, Farnborough; and, if so, the number and nature of each licence, and to whom it had been issued.—Mr. CLYNES replied: The answer is in the negative.

Pensions and Relief Statistics.

Replying to Mr. MANDER, Mr. PETHICK-LAWRENCE (Financial Secretary to the Treasury) stated the total amount paid to old age pensioners in Great Britain in the year ended March 31st, 1931, was £36,700,000. The figure included non-contributory pensions to persons over 70, contributory pensions to persons over 70 by virtue of the Acts of 1925 and 1929, and blind pensions to persons between the age of 50 and 70. The cost of administration was as follows: expenses of pensions committees, £38,000; expenses of administration by the Government departments concerned estimated at £830,000. This did not include the cost of administration by the Ministry of Health, the Department of Health for Scotland, and the Welsh Board of Health of pensions granted by virtue of Acts of 1925 and 1929 which was chargeable to the pensions accounts.

THURSDAY, JULY 23RD.

Dental Inspection of School Children.

Mr. HARRIS asked the President of the Board of Education how many children were subject to dental inspection for the year ending March, 1931; how many were stated to require treatment; and what percentage of them requiring such treatment received attention.—Mr. LEES-SMITH replied: During the year ended Dec. 31st, 1930, 2,840,000 children attending public elementary schools in England and Wales were inspected by school dentists. Of these, 1,975,000 were found to require treatment, and 63·4 per cent. of this latter number received treatment under arrangements made by the local education authorities.

Medical Fees for Maternity Cases.

Sir ERNEST GRAHAM-LITTLE asked the Minister of Health whether he was aware that the provision in the Midwives and Maternity Homes Act of 1926, Section 2, requiring claims to be sent in by medical men for their fees within two months from the date of attendance on patients, inflicted hardship on many medical men because their arrangements normally were to send their accounts out twice annually; and if he would by regulation provide that medical men to whom fees were due under this section might send their accounts to the local authority on the next occasion of sending out their accounts after having attended the patients.—Mr. GREENWOOD replied: Representations on this matter were made to the Departmental Committee on the Training and Employment of Midwives, whose report included a recommendation on the subject. The question will be borne in mind in connexion with any legislation for the amendment of the Midwives Acts, but I have no power to deal with the matter by regulation.

Women Nurses in Mental Hospitals.

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of Health whether he had any information as to the number of female nurses employed in the male wards of mental hospitals; and whether the question of this being a suitable occupation for women had been considered.—Mr. GREENWOOD replied: The number of women nurses now employed in the nursing of male patients in public mental hospitals is approximately 320, who are mainly employed in the infirmary wards. The general principle has been the subject of careful consideration by the central and local authorities for many years past, and the practice of employing women in the nursing of selected male patients is of long standing. The Royal Commission on Lunacy, which reported in 1926, recommended the more general employment of women nurses in certain male wards.

Infantile Mortality-rates in London.

Mr. WEST asked the Minister of Health the infantile mortality-rates for 1930 in Woolwich, Poplar, and North Kensington.—Mr. GREENWOOD replied: The provisional mortality-rate in 1930—i.e., the number of deaths of children under 1 year of age per 1000 live births—was 42 for Woolwich and 55 for Poplar. The Registrar-General has no similar information for North Kensington, but according to the annual report of the Medical Officer of Health the infant mortality-rate in 1930 for that portion of the borough of Kensington was 76.

Medical Practitioners and Insurance Certificates.

Mr. THOMAS LEWIS asked the Minister of Health whether he was satisfied that the medical practitioners undertaking insurance work were only issuing certificates of incapacity to insured persons genuinely unable to follow any occupation by reason of sickness; and, if not, whether he would provide that the cost of sickness visitation undertaken by approved societies should be borne out of the funds payable by approved societies towards the cost of medical treatment until such time as he was satisfied that the medical practitioners were issuing certificates of incapacity strictly in accordance with the regulations.—Mr. GREENWOOD replied: My hon. friend will be aware that steps have recently been taken by the amendment of the Medical Benefit Regulations, and by the issue of a memorandum on certification to all insurance doctors with the object of ensuring that claims on the funds of approved societies are not supported by medical certificates in any case in which the claimant is not incapable of work. I could not undertake to consider favourably the suggestion made in the question, which appears to be based on the assumption that sickness visitation is required solely as a check on medical certification.

Mr. LEWIS: Is it not a fact that additional supervision is being requested from the societies on account of increased sickness?

Mr. GREENWOOD: That may be true, but the point of the question is the assumption that because of that there is a need for increased visitation, which I do not accept.

Dental Benefit.

Mr. THOMAS LEWIS asked the Minister of Health the total amount spent by approved societies in connexion with the provision of dental benefit since the inception of that benefit; and what effect, if any, the provision of this treatment had had upon the benefit funds of approved societies.—Mr. GREENWOOD replied: The total amount spent by approved societies on dental benefit from the commencement of the benefit to the end of the year 1930 is approximately £10,500,000. It is not possible to state what effect this expenditure has had upon the benefit funds; but the importance of dental treatment in avoiding or reducing the liability to ill-health is widely recognised.

MONDAY, JULY 27TH.

Cerebro-spinal Fever.

Lieut.-Colonel FREMANTLE asked the Minister of Health the number of cases of cerebro-spinal meningitis notified in England and Wales in each of the last four weeks; and in what areas there was special prevalence.—Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: The following is the answer: provisional figures relating to civilians only of the numbers of cases of cerebro-spinal fever notified in England and Wales during the four weeks ended July 18th, 1931, are:—

Week ended June 27th	..	..	41 cases.
,, ,, July 4th	..	..	39 ,,
,, ,, ,, 11th	..	..	43 ,,
,, ,, ,, 18th	..	..	43 ,,

Of these 166 cases, 72 were notified in the West Riding of Yorkshire, and 22 in Lancashire.

Lieut.-Colonel FREMANTLE asked if Miss Lawrence thought that as a result of these figures it was advisable to stop the congregation of people on their holidays.

Miss LAWRENCE said that she drew no such conclusion. A question of that kind ought to be addressed to another Minister.

Lieut.-Colonel FREMANTLE asked if the Minister had advised the War Office to cancel their camps in consequence of this.

The question was not answered.

Lieut.-Colonel FREMANTLE asked the Secretary of State for Scotland the number of cases of cerebro-spinal meningitis notified in Scotland in each of the last four weeks; and in what areas there was special prevalence.—Mr. WESTWOOD (Under-Secretary of State in Scotland) replied: The numbers of cases of cerebro-spinal fever notified in Scotland during the past four weeks were as follows:—

Week ended June 27th	..	..	11 cases.
,, ,, July 4th	..	..	5 ,,
,, ,, ,, 11th	..	..	13 ,,
,, ,, ,, 18th	..	..	6 ,,
			35

Of these cases, 19 were notified in Glasgow.

Lieut.-Colonel FREMANTLE asked whether, as a result of this, the Secretary of State had advised people not to congregate on their holidays.

Mr. WESTWOOD said that the point of that supplementary question was not in the original question. He had answered everything in the question.

Replying to the Speaker, Lieut.-Colonel FREMANTLE pointed out that this was an extraordinarily serious question, on which all the country wanted advice. Action had already been taken on the advice of the Minister on those actual facts, and it was on those facts that he wanted to cross-examine the Minister.

The Speaker said that question time was not the time for cross-examination.

Mr. PYBUS asked if it was in order for a Member to ask a question which if it got into the press would damage the prospects of every seaside resort in the country.

Lieut.-Colonel FREMANTLE gave notice that he would raise the question, both in regard to the Ministry of Health for England and Wales and in regard to Scotland, on the Appropriation Bill.

Mr. MARJORIBANKS asked the Secretary of State for War whether, in view of the increase of meningitis in the army at home, he had taken any and, if so, what steps of a precautionary nature.—Mr. SHAW replied: I can assure the hon. Member that every possible precaution is being taken.

Mr. MARJORIBANKS asked if any steps had been taken in regard to the permanent buildings in which the army was situated, especially in regard to the winter months.

Mr. SHAW said that special precautions had been taken with regard to the sterilisation of utensils, with regard to ventilation, over-crowding and, above all, to the persons who were suspected of being carriers of the disease. He did not think there was need to make special provision with regard to the permanent buildings.

TUESDAY, JULY 28TH.

Road Accidents in London.

Mr. NAYLOR asked the Home Secretary how many fatal and non-fatal road accidents had occurred in the Metropolitan area since the abolition of the speed limit; and how many occurred during the corresponding calendar period prior to the abolition.—Mr. CLYNES replied: The figures are as follows:—Return of the number of accidents in which persons were killed or injured within the Metropolitan Police District during the months of January, February, March, April, May, and June, 1930 and 1931:—

Month.	1930.		1931.	
	Fatal accidents.	Non-fatal accidents.	Fatal accidents.	Non-fatal accidents.
January ..	118	3501	86	3016
February ..	102	2928	87	2804
March ..	98	3960	113	3259
April ..	112	4243	108	4011
May	109	4798	114	4727
June.. ..	109	*	116	*
Totals ..	648	19,430	624	17,817

* The figures for the non-fatal accidents for the months of June, 1930 and 1931, are omitted as those for the 1931 period are not yet available.

Opium Consumption in the Far East.

Mr. WELLOCK asked the Under-Secretary of State for the Colonies, whether any steps were being taken in British Colonies and Dependencies to carry out the recommendations of the Report of the commission of inquiry into the control of opium consumption in the Far East.—Dr. SHIELS replied: The recommendations have been carefully considered by the Governments concerned, but it is considered advisable to defer any changes in the existing system of control until the Commission's recommendations have been fully discussed at the International Conference which is to be held at Bangkok in November.

THE PLYMOUTH HOSPITALS.—The recent Plymouth Hospitals' Fair has produced £13,000. Last week the Mayor of Plymouth opened additions to Swilly Hospital.

ST. BARTHOLOMEW'S ADVISORY COMMITTEE.—The advisory revenue and expenditure committee, which it was recently decided to appoint, has now been constituted as follows: Sir Phené Neal (Lord Mayor of London), Lord Plender, Sir William McLintock, Mr. Cecil Lubbock, and Mr. Stanley Christopherson. The committee will advise on the financial policy of the hospital and on all proposals involving extraordinary capital expenditure or material increase in ordinary maintenance costs.

THE SERVICES

ROYAL ARMY MEDICAL CORPS.

Lt. (on prob.) W. A. Robinson, from the secd. list, is restd. to the estabt.

L. T. Furnivall to be Lt. (on prob.) and is secd. under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931, from that date.

TERRITORIAL ARMY.

Lt. R. H. Yelf (late Loyal R.) to be Lt.

INDIAN MEDICAL SERVICE.

Capt. G. V. Gollerkeri relinquishes his temp. commn.

MEDICAL NEWS

University of Cambridge.

At recent examinations the following candidates were successful:—

D.M.R.E.

Part II.—Walter Addey, William Ahern, G. S. Bhargava, H. W. Davies, G. C. Fairchild, C. P. Goswami, J. J. O'Gray, and Thomas Simpson.

University of London.

On the occasion of the centenary meeting of the British Association in London next September the Senate have decided to confer the honorary degree of Doctor of Science on General Smuts, F.R.S., the President, and on Sir Gowland Hopkins (the present President of the Royal Society), Lord Rutherford of Nelson, O.M., Sir Charles Sherrington, O.M., and Sir Joseph J. Thomson, O.M., all of whom have occupied the same office.

At recent examinations the following candidates were successful:—

FOURTH EXAMINATION FOR B.D.S.

Ronald Lawton, King's Coll. Hosp.; T. W. E. Pugh, Guy's Hosp.; and W. M. Sinclair, King's Coll. Hosp.

University of Edinburgh.

On July 22nd the following degrees and diplomas were conferred:—

M.D.—† R. S. Begbie (in absentiâ), William Bird, ‡ Arthur Bloom (in absentiâ), E. M. R. Frazer, H. H. C. Fuller, Alexander Hood, F. M. Khan (in absentiâ), D. T. Mackie, ‡ John Macqueen (in absentiâ), ‡ P. V. Pritchard, and J. O. Reid (in absentiâ).

† Highly commended for Thesis. ‡ Commended for Thesis.

D.Sc.—Donald Mainland, M.B. (in absentiâ).

Ph.D.—J. C. David, M.B. (in absentiâ).

M.B., Ch.B.—N. S. Alcock, D. M. Anderson, * W. M. Arnott, J. B. Arthur, C. E. S. Bailey, G. M. Balfour, James Barnetson, J. C. Barnetson, I. M. Bell, C. H. Bentley, J. A. Berry, B. S. Bindra, W. G. Bisset, A. D. Broatch, * J. J. M. Brown, D. G. Brownlie, A. A. Buxton, A. J. Campbell, J. R. Candy, * Gurth Carpenter, J. K. Chappell, R. T. Cooke, A. M. Cooper, W. J. Cowan, P. N. Cutner, C. G. Cutting, James Davidson, J. L. Dobbie, I. I. Felner, P. J. K. Ferguson, H. H. Fernando, Isidor Feuer, F. S. Fiddes, T. M. S. Findlater, W. H. Fost, F. A. Franklin, G. A. Fraser, N. S. Fraser, Michael Gaffney, E. J. D. Gillespie, G. C. Gillison, G. A. D. Gordon, Israel Gordon, A. R. Graham, E. R. Gunson, Endre Gunstensen, * J. G. M. Hamilton, J. S. Hamilton, M. L. Hart, W. D. Henderson, Ana Van Hoesen, R. G. Hood, A. W. Hopkins, R. S. Howard, A. M. Hunter, Janet C. Hyslop, Miriam Jansen van Vuuren, Archibald Jeffrey, R. G. Johnson, M. S. Jones, Prasert Kansadalya, R. J. Kellar, Isobel O. Kennedy, A. J. Kotzé, Aaron Kramer, R. A. H. Krynauw, Frank Lederfeind, Arthur Lees Low, W. M. Leslie, M. J. Liebenberg, R. S. Lind, D. C. Logan, E. W. Low, R. M. S. M'Conaghey, W. G. M'David, P. C. M'Kinlay, Flora S. MacNaughtan, A. R. M'Pherson, C. J. Massey, G. H. Meiring, Stephen Melmed, H. O. M. Merewether, Harry Meyer, R. L. H. Minchin, J. C. G. Mitchell, P. K. Morrison, Rosa Morrison, C. S. Morrow, M. T. Murchison, Sidney Nechemias, John Neill, M. E. Neuman, M. M. Parker, A. R. Parkes, Jean W. R. Paton, David Pecker, Margaret I. Porteous, F. P. Reid, F. M. Rifkin, A. A. Robertson, J. H. G. Robertson, Richard Ropner, Alice M. Ross, Frances E. T. Ross, T. F. Ross, Benjamin Rubin, E. J. Samuel, S. S. Sawaf, H. H. Sawicky, J. A. Scott, Henry Shaffer, A. F. A. F. Shahin, E. H. C. Shepherd, J. L. Skene, Ruby J. B. Slater, I. S. Smillie, Jack Spark-Silverson, Dorothy M. Stuart, D. B. Swart, Grace H. Thomson, Helen Turner, C. E. van Rooyen, J. Y. Walker, Henry Waters, R. E. Waterston, G. W. Watson, Andrew Watt, A. M. Watt, I. I. Weiss, Barbara C. Welsh, J. H. Wilson, R. B. Wilson, and Robert Woodrow.

D.T.M. & H.—A. A. F. Brown, and W. R. Duff.

Diploma in Radiology.—Angus Campbell, R. J. W. Charlton, A. J. Groenewald, D. G. Maitland, and W. S. Shearer.

The following awards were made: Syme Surgical Fellowship, John Bruce, M.B.; Gunning Victoria Jubilee Prize in Surgery, I. G. W. Hill, M.B.; Lauder Brunton Prize in Pharmacology and Therapeutics, C. M. Scott, M.B. Ettles Scholarship and Leslie Gold Medal, J. G. M. Hamilton, M.B.; Allan Fellowship

in Clinical Medicine and Clinical Surgery, J. G. M. Hamilton, M.B.; Murchison Scholarship in Clinical Medicine, W. M. Arnott, M.B., and R. J. Kellar, M.B.; M'Cosh Graduate's and Medical Bursaries, H. A. Raeburn, M.B.; Mouat Scholarship in the Practice of Physic, P. C. M'Kinlay, M.B.; Buchanan Scholarship in Midwifery and Gynæcology, R. J. Kellar, M.B.; James Scott Scholarship in Midwifery, Arthur Lees-Low, M.B., and J. A. Scott, M.B.; Beaney Prize in Anatomy and Surgery, Gurth Carpenter, M.B.; Conan Doyle Prize, Israel Gordon, M.B.; Annandale Gold Medal in Clinical Surgery, R. J. Kellar, M.B.; Murdoch Brown Silver Medal in Clinical Medicine, W. M. Arnott, M.B.; Royal Victoria Hospital Tuberculosis Trust Gold Medal, J. H. Wilson, M.B.; Thomson Medal in Diseases of Children, W. S. M'R. Craig, M.B.; Scottish Association for Medical Education of Women Prize, Jean W. R. Paton, M.B.; Dorothy Gilfillan Prize, Isobel O. Kennedy, M.B., and Jean W. R. Paton, M.B.; Wightman Prize in Clinical Medicine, R. J. Kellar, M.B.; Pattison Prize in Clinical Surgery, J. J. M. Brown, M.B.; Cunningham Medal and Prize in Anatomy, R. W. Armour, Ph.D.

The Cameron Prize in Practical Therapeutics has been awarded to Madame Marie Curie, Director of the Curie Laboratories at the Radium Institute of the University of Paris, "in recognition of the fruitful therapeutic results which have been made possible by her discovery of radium."

• With Honours.

Royal College of Surgeons of Edinburgh.

At a recent meeting of the College, with Dr. James Haig Ferguson, the President, in the chair, the following 26 successful candidates (out of 96 entered), who passed the requisite examinations between March 26th and April 4th, were admitted as Fellows:—

Gopinath Ganesh Ambegaokar, M.B., Bombay; David William Bawtree, M.B. Camb.; Andrew Johnstone Brown, L.R.C.P., L.D.S. Edin.; James Roderick Johnston Cameron, L.R.C.P., L.D.S. Edin.; Cecil Nathaniel Love Cantor, M.D. Melb.; Harold Carter, M.B. Edin.; Joseph Jefferson Coulthard, M.B. Edin.; David Sydney Davies, M.D. Oxf.; James Bruce Dewar, M.B. Edin.; Duncan Iain Campbell Finlayson, M.B. Edin.; Henry Parke Forster, M.B. Cape Town; Noel Gerald Carleton Gane, M.R.C.S. Eng.; Robert Grieve Hutchison, F.R.F.P.S. Glasg.; John Godfrey Kingsbury, M.B. Lond.; Leon Eric Lane, M.R.C.S. Eng.; John Christian Mayo, M.B. Adelaide; John Horsfield Otty, M.B. Aberd.; Leslie Bonthron Patrick, M.B. Edin.; Robert Gordon Paul, L.R.C.P. Edin.; Thomas Mackenzie Reid, M.B. Edin.; Edwin Moody Robertson, M.B. Edin.; Eric Hugo Thomas Rutherford, M.B. St. And.; Robert Sampson, M.B. Edin.; Walter Netley Searle, M.B. N.Z.; Bronte Creagh Smeaton, M.B. Adelaide; and David Wardrop, M.R.C.S. Eng.

At the same meeting Rebecca Evelyn Roulston, M.B. Glasg., who passed the examination in 1930, was admitted a Fellow.

Royal Sanitary Institute.

Lord Balfour of Burleigh has been elected President of the Institute in succession to the late Duke of Northumberland.

Royal College of Physicians of Edinburgh.

A quarterly meeting of the College was held on July 21st, with Sir Norman Walker, the President, in the chair.

Dr. George Hector Percival (Edinburgh), Dr. David Lees, (Edinburgh), Miss Margaret Black Martin (Edinburgh), and Dr. Joseph Ryland Whitaker (Edinburgh) were introduced and took their seats as Fellows of the College.—Dr. Thomas Douglas Inch (Gorebridge), Dr. Walter John May (Durban), Dr. Edward Robert Charles Walker (Aberdeen), and Dr. David Taylor Mackie (Exeter) were elected to the Fellowship.

Dr. James Collier (London) was appointed Morison Lecturer for 1932.

Research Fellowship.—In accordance with the bequest by Mrs. Isabella Kirk Duncanson, to commemorate the late Dr. J. J. Kirk Duncanson, the council will award a Kirk Duncanson Research Fellowship next October. A Fellowship will be awarded annually for a period of one year, and may be renewed for two additional periods of a year each. The emolument will be upwards of £150 for the first year, about £250 for the second year, and about £350 for the third year. In making the first award special consideration will be given to the claims of candidates who propose to devote themselves to diseases of the ear, nose, or throat. Applications must be made in proper form before Oct. 15th.

International Surgical Congress.

The ninth congress of the Société Internationale de Chirurgie will be held in Madrid from March 15th to 18th, 1932, with Prof. F. de Quervain, of Berne, as president. The chief subjects of discussion will be tumours of the spine, non-tuberculous pulmonary suppuration, the surgery of the œsophagus, and surgical anæsthetics. For the first time since the late war the speakers will include representatives of German surgery. The address of the secretary-general, Dr. L. Mayer, is 72, rue de la Loi, Brussels.

National Hospital, Queen-square.

The out-patient department of this hospital will be closed during the first three weeks in August.

St. Mary's Hospital Dinner.

The annual dinner of past and present students of St. Mary's Hospital, London, will be held at the Trocadero Restaurant, Piccadilly-circus, on Friday, Oct. 2nd, at 7 P.M.

Argentine Medical Congress.

Lord Moynihan, President of the Royal College of Surgeons, has sailed for South America, where he is to represent the British medical profession at the coming congress at Buenos Aires.

St. Thomas's Hospital Dinner.

The old students' dinner will be held at the May Fair Hotel, Berkeley-street, London, W., at 7.30 for 8 P.M. on Friday, Oct. 2nd, with Mr. J. Herbert Fisher in the chair.

International Tropical Medicine.

An International Federation of Societies of Tropical Medicine and Hygiene has been constituted under the presidency of Prof. C. Achard, of Paris. The preliminary discussions took place at the invitation of the *Revue des Maladies des Pays Chauds*, and societies from some twenty countries have joined the federation.

German Pharmacological Society.

This year's congress of the Deutsche Pharmakologische Gesellschaft, which was to have been held at Vienna from Sept. 20th to 23rd, has been indefinitely postponed because of the economic situation in Germany and consequent difficulties of travel.

Medical Tour in Italy.

We are informed that there are still a few vacancies in the medical tour to Italian resorts and spas organised by the Italian State Tourist Department (E.N.I.T.) in September and October next. Members of the party will assemble at Rome on Sept. 18th and the tour will end at Palermo on Oct. 2nd. Particulars may be had from the British representative, Major W. Stormont, at 16, Waterloo-place, London, S.W.1.

Research Fellowships in Tuberculosis.

The Medical Research Council announce that they have awarded Dorothy Temple Cross Fellowships for 1931–32 to Charles Allan Birch, M.R.C.P., senior medical registrar and tutor at the Royal Infirmary, Liverpool, and to Roy Lars Vollum, D.Phil., demonstrator in pathology in the University of Oxford. Dr. Birch has received a Fellowship for the study of problems of tuberculosis at industrial centres in the United States. Dr. Vollum will study recent developments in methods for the investigation of tuberculosis, in Germany and Austria. The Fellowship awarded last year to Lieut. Sidney Malcolm Burrows, R.A.M.C., late clinical assistant in the Tuberculosis Department at St. Thomas's Hospital, has been renewed for a further year.

Epsom College, Founder's Day.

Founder's Day was celebrated at Epsom College on Saturday, July 25th, when the Chairman of the Council, Dr. Raymond Crawfurd, distributed the prizes and afterwards spoke to the boys on the true aims of education,—namely, the production of a healthy body, an active, intelligent mind, and steadfastness of character. He referred to the steps recently taken by the Council to extend the teaching of biology by making it a school certificate subject, and gave the boys a clear insight into the most pleasurable way of combining biology and natural history. The range of recreational activities had been extended, he added, by building four new hard tennis-courts, now nearing completion.

The headmaster, Mr. A. C. Powell, reported on the school's activities during the past year, and announced that Lord Dawson of Penn had agreed to open the new sanatorium on Saturday, Oct. 3rd. Among the beneficial results that would accrue from the building, not the least, he said, was that additional boys were able to be taken into the previous sanatorium as a waiting house, which now was necessary.

With the conclusion of the proceedings in Big School rain fell in torrents and an assault-at-arms, planned for the open air, had to be transferred, hurriedly, to the gymnasium, which could not possibly cope with everyone anxious to witness a most excellent performance. About 1000 guests were present at tea, and its says much for all concerned that the great majority braved the elements in order to witness in the evening an enjoyable production of "Patience" by the College Choral Society.

NOTES, COMMENTS, AND ABSTRACTS

THE HOSPITALS OF JAPAN.

(FROM A CORRESPONDENT IN TOKYO.)

JAPANESE hospitals may be said to have their origin in the Nara period (710–780). There were then established the *hiden-in* (medical treatment) and the *seyakuin* (medicine dispensing) institutions. They were organised and conducted by the Buddhists, and were nothing more than charitable institutions for social welfare. Later, in the Kamakura era (1185–1333) we find traces of the *ryobyoin* (charity hospitals) and the *hiden-in*, institutions of a similar nature, but without either accommodation or the elementary requirements of a modern hospital.

During the civil wars (1464–1586) Hideyoshi Toyotomi re-established the *seyakuin*, but it did not become a permanent institution. After this, Louis Almeida, the Portuguese, built a sort of combined leper hospital and orphanage, but this, again, was not maintained. It is noteworthy that from the introduction of medical science into Japan the foreigners have been the pioneers in caring for the lepers.

As early as 1722 Shogun Yoshimune Tokugawa built a kind of convalescent home within the grounds of what was then known as the Hakusan Medicine Garden, at Koishikawa, Tokyo. This is considered by the Japanese as the precursor of the first state medical institution. It was established on the advice of Dr. Sensen Ogawa, and at first accommodated 40 patients. This number had increased to 100 by the year 1723, and in 1729 the home was able to take 150 convalescents. Yoshimune Tokugawa also built a *seyakuin*, or "medicine-giving place." After this facilities were afforded for the treatment of patients in the so-called medical schools of the subordinate lords, or *dainyo*, as also in the private schools established by the eminent physicians of Edo (Tokyo), Osaka, and Kyoto.

Those places could not, of course, as yet be called hospitals in anything like the modern sense of the word, but a century later, in 1868, there came the Meiji restoration, when the medical school at the home of Todo, at Shitaya, Edo, was named the Dai Byoin (Great Hospital), and the original medical school was considered attached to it. In 1869 this Dai Byoin was annexed by the university. While this was taking place in the capital most of the medical schools of the leading clans, which had become absorbed in the empire, were transformed into medical schools and hospitals in the then modern sense. Some, however, were transformed into prefectural hospitals, so that to-day the prefectural hospitals of Kagoshima, Hiroshima, Gifu, Nara, Morioka, and Yamagata are the transformations of the old clan hospitals of the pre-Meiji feudal Japan.

Special hospitals dating from this time around the restoration are the Matsuzawa hospital for mental diseases, established in 1888, the Tokyo City Hospital (established in 1872), while in more recent times there are the Yokohama Juzen Hospital (1920) and the Kobe Shimin (Citizens') Hospital (1920).

Foreign Influence.

It would not be out of place to mention here that William Willis, an Englishman, introduced the English school of medicine to Japan in the first year of Meiji, 1868. He came to Japan for this purpose at the invitation of the Kagoshima clan. Willis rendered valuable service during the restoration, and as a mark of appreciation was appointed professor of medicine in the Tokyo Hospital attached to Igakusho, the nucleus of which is now the Imperial University of Tokyo.

At the present time the German influence is probably greatest—the pre-war prestige of German medicine being largely reinstated in Japan. American influence is almost exclusively limited to that of the various missionary societies. At St. Luke's Hospital, the largest and most important of the American or foreign institutions, it is proposed to establish a medical faculty by amalgamation with the American private university of Rikkyo (St. Paul's College).

Private and Public Benefactions.

Among the hospitals built by Japanese philanthropists the most important to-day are the Mitsui Philanthropic Hospital (1909), the Yamaguchi Kosei Hospital (1925), and the Okayama Tuberculosis Hospital. The Red Cross Society, which was established in 1882, and increased considerably in importance with the Sino-Japanese war, in 1894, and the Russo-Japanese war, in 1904, has its chief hospitals in Tokyo, with branch hospitals elsewhere. Osaka has also its Electric (Bureau) Hospital, while the railway office has its own hospitals in six of Japan's largest towns—Tokyo, Nagoya, Osaka, Sendai, Moji, and Sapporo. Other hospitals of importance are those established by the charity organisations, of which the best known is that belonging to the saiseikai, or relief association. This was founded by the money and encouragement of the Emperor Meiji himself, who intended it as a philanthropic hospital for the poor. With its imperial patronage the saiseikai built its head hospital in Tokyo, with branch hospitals in Osaka, Kanagawa, Hyogo, Fukuoka, Kyoto, and Kochi. It also controls 41 clinics, 3 tuberculosis hospitals, 1 orphanage, and 15 itinerary medical corps, and it receives an annual state subsidy of £25,000.

Present Position.

The present state of Japanese hospitals gives great promise for the future, but, unfortunately, there are an increasing number of private clinics which make the establishment of larger and better-equipped institutions more difficult.

Leprosy, Tubercle, and Mental Disease.

The Government has at last taken steps to augment the Empress Dowager's grant for the establishment of leper hospitals, which was, perhaps, Japan's most pressing need. Though the Government's plan to eradicate leprosy within 30 years is not thought feasible by the medical and other critics, it is most encouraging to see that at last an attempt is being made to promote the work begun and carried on for years, almost unaided, by foreign Christian missions. The same may be said of the tuberculosis sanatoriums. Here, too, the Government has decided on the establishment of sanatoriums throughout the country, but in view of the large number of tuberculous people within the Empire the scheme even when complete will be quite inadequate.

Another branch of medicine sorely neglected in Japan at present is the treatment of mental diseases. Here the State has done little so far, and for the moment there appears little prospect of anything being done officially. In a country where it is considered the family's painful duty to care for its own idiot children, and where, at the same time, it is believed to be a curse of the gods if a family should number an idiot among its members, it may well be imagined what is the general fate of lunatics. Fortunately there is nowadays a healthy reaction in these and other matters—thanks largely to the Japanese and foreign English press.

The raising of women's status in Japan will no doubt serve to abolish many abuses, and must also considerably advance the welfare of children. The first Women's Suffrage Bill, which was recently introduced in the Diet, was rejected by the House of Peers after having passed the Lower House, but a long-closed door has begun to open. That Japan is daily taking an increasing interest in medicine and eugenics is patent to all who are in any way acquainted with the country.

NICOT AND THE DISCOVERY OF TOBACCO.

THE fourth centenary of the birth of Jean Nicot, French ambassador to the Court of Portugal from 1559 to 1561, was the occasion last year of much celebration of his fame as the discoverer of tobacco. Dr. Paul Koenig[1] holds this reputation to be undeserved. Although, he says, Nicot did much to popularise this herb in France, it had been known in Europe before his birth. Dr. Pedro Martyr de Angleria, a friend of Columbus, published in Seville, in 1511, and in Paris 21 years later, a work entitled De Rebus Oceanicis et de Orbo Novo Decades Tres, in which he mentioned the account of tobacco communicated to Columbus in a letter by Fray Romano Pane, who had remained in Hispaniola as a missionary. The honour of first bringing tobacco to France belongs, according to Dr. Koenig, to a Carmelite called André Thevet, who went to Rio de Janeiro with the Maltese knight Nicolas Durant in 1555. In 1558, Thevet described the plant in a book (which probably contains the earliest extant description of a cigar) and cultivated it under the name of "l'herbe angoulmoisine," after his birthplace, Angoulême. Nevertheless, Thevet did nothing to popularise tobacco, and in the opinion of Dr. Koenig was probably growing *Nicotiana rustica*, which his friends would have found too strong. According to the more credible of two accounts, Nicot saw the plant flowering in the garden of the palace at Seville, begged some seeds from the head gardener, and raised them at the Embassy. He learned its therapeutic properties—perhaps, Dr. Koenig suggests, from Prof. Nicolo Monardes, who then occupied the chair of medicine at Seville—and called it the "Wonder-plant." He succeeded in curing ulcers and wounds with applications of the fresh leaves, and soon acquired great fame, first in Lisbon and then in Paris. He named tobacco "nicotiana" after himself, and, as a step towards the perpetuation of this name, incorporated it in the dictionary of the French language which he compiled. It was displaced in popular speech by various forms of the word "tabaco," the aboriginals' name for their pipe, but has survived in the language of botany, and the fame of Nicot has been immortalised in the name of the alkaloid nicotine, first isolated at Heidelberg in 1828 by Reinmann and Posselt. Nevertheless, to judge by the present importance of tobacco in civilised life, it is doubtful whether any one man was ever indispensable to its popularisation in Europe. It entered England independently of Nicot, and if he had not brought it to France from Portugal someone else would certainly have brought it in from this country.

A NEW ARC LAMP.

WITH the ordinary open carbon arc running on direct current, the potential difference across the electrodes is about 45 volts. The difference between this value and the voltage of the supply has to be taken up in a series resistance. This involves much loss of efficiency, since only a small proportion of the power drawn from the main is employed in the arc itself. Any attempt to increase the potential difference across the electrodes by increasing the length of the arc results in irregular running conditions. The length of an enclosed arc can be considerably increased without producing this effect, but for therapeutic work the glass container absorbs the effective part of the radiation.

The Kandem arc, recently put forward by Messrs. Korling and Mathiesen, of Leipzig, is a successful attempt to get over these difficulties. The arc is struck between two cored carbons mounted horizontally in a cylindrical metal housing. In the front of this chamber a rectangular window is cut. The window is not glazed or covered in any way. The arc is controlled by an automatic mechanism to run at a length of about 2½ in., but owing to the enclosure the discharge is perfectly steady. A magnetic blower is fitted in such a position as to flatten the arc so that it is a horizontal flame, and not bent into an arch as otherwise it would be by the upward current of hot gases. Owing to the length of the flame the potential difference across the electrodes is 110 to 120 volts. Hence a much higher proportion of the energy drawn from the mains is applied to the generation of ultra-violet radiation instead of being lost as heat in the series resistance. It has been shown by Angus that in the carbon arc a long flame is more efficient for the same current than a short one for therapeutic application, because the valuable radiation comes from the discharge rather than the incandescent electrodes.

Other advantages, too, are claimed for mounting the arc in a partially enclosed chamber. It has been found that any carbon monoxide produced will be oxidised completely to carbon dioxide in the heated enclosure. Further, the oxides of the metals used in coring are deposited on the inside of the cylinder and do not escape into the room as with the ordinary type of arc. The presence of any dangerous concentration of CO in a room in which a carbon arc is run has not so far been reported, and probably ventilation would have to be very inefficient for such conditions to develop; but the fumes of oxide from metallic and cored metallic arcs have been found unpleasant when prolonged treatment is employed as in a hospital or clinic.

To summarise: the Kandem arc is a new development employing carbon or cored carbon arcs. The arc is of high efficiency, giving a large output of ultra-violet radiation for the power consumed. The steadiness of running results in a very uniform intensity, a point of much importance in therapeutic work. The lamps are made to work on D.C. and A.C. supply, and in two sizes for 6 and 24 amps. respectively.

GUIDE TO CURRENT OFFICIAL STATISTICS.

THE ninth volume of this guide, which covers the whole of the statistical information contained in official publications in 1930 by government departments in Great Britain and Northern Ireland, has just been issued and may be obtained from H.M. Stationery Office (1s.). It is issued by the Permanent Consultative Committee on Official Statistics, London, and its object is to direct the inquirer to all official publications that contain statistics bearing on the particular subject with which he is concerned, and more especially to inform him of the nature of the statistics he will find in the volumes to which he is referred—i.e., the mode of analysis and the time and place to which they relate. There are two distinct sections in the book: (1) An alphabetical subject index with indicating numbers, and (2) a list of publications in numerical order.

"HIDDEN POWER."

Dr. Charles Russ's play, called "Hidden Power," is being presented again in London by the Warwick James repertory company. It is a drama full of medical interest, for its opening (and only) murder is committed by the anæsthetist during an operation, and his guilt is subsequently discovered by hypnosis. This gives Dr. Russ a good opportunity for discussing, through his characters, some important aspects of mind and body, and he makes suggestive comments on psychological analysis as practised by doctors and clergy. At the same time he contrives a number of startling situations, and at moments of crisis in the consulting room it is soothing to refer to the programme and find the names of well-known surgical instrument makers in place of the usual "wigs by Clarkson." It must be admitted, however, that the play lacks surprises, and it certainly requires ruthless compression. It only begins to live in the third act, and the fifth betrays its origin in an afterthought. Perhaps we could not reasonably expect the heroine's little son to have grown in stature since

[1] Münch. med. Woch., July 3rd, p. 1144.

we first met him two years before; but he still seemed deplorably young for his original age.

The play is to be seen at King George's Theatre, Caroline Street, Great Russell Street, London, W.C.1, until the end of this week.

DIETETICS.

A WORK [1] whose author endeavours to omit all medical details and yet to deal with a most important branch of therapeutics must suffer from certain limitations. This one is easily understandable by the layman, but as the layman is not likely to be so unlucky as to suffer simultaneously from acute colitis, constipation, diabetes, dysentery, gastric ulcer, gout, hypertension, and obesity, it must necessarily tend to tempt him to take an undue interest in subjects which are not his concern. If, on the other hand, it is intended for the medical man, he is bound to be somewhat disappointed to find the dietary for gastric ulcer, for example, confined to Leuber's diet or Panzalt's diet, neither of which is frequently advocated in this country. The diets laid down with the dogmatism of capital letters in such conditions as hypertension, gastritis, and rheumatism lack scientific support. For these reasons we are unable to commend the book.

THE MEDICAL DIRECTORY.

Messrs. J. & A. Churchill write: "The annual circular has been posted to each member of the medical profession. If the form has not been received, a duplicate will be sent on request. We shall be grateful for the return of the forms by an early post."

SULPHUR TREATMENT of G.P.I.—Commenting on the opening sentence of an annotation on this subject in THE LANCET last week (p. 200), Mr. J. E. R. McDonagh points out that he was using organic compounds of sulphur in the treatment of G.P.I. in 1916 [2]—that is nine years before sulphur was suggested as a pyrexial agent in substitute for malaria.

Appointments

FLETCHER, E., M.B. Camb., M.R.C.P. Lond., has been appointed Assistant Physican to the Queen Mary's Hospital for the East End.

SAVIN, L. H., M.D. Lond., M.R.C.P. Lond., F.R.C.S., Junior Ophthalmic Surgeon to King's College Hospital.

STOTT, W., M.B., B.S. Durh., D.P.H., Medical Officer, Southwark.

Certifying Surgeons under the Factory and Workshops Act: HARRISON, C. B., L.R.C.P., L.R.C.S. Irel. (Youlgreave, Derby); HENDERSON, W. (Burgess Hill, Sussex); SCOTT, W. J., M.B., Ch.B. Glasg. (Annbank, Ayr); TAYLOR-JONES, T. H. E. (Tenderden, Kent).

Vacancies

For further information refer to the advertisement columns.

Accrington, Victoria Hospital.—H.S. £150.
Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and £100 respectively.
Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.
Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.
Barnsley, Beckett Hospital and Dispensary.—H.P. £200.
Barnstaple, North Devon Infirmary.—Res. M.O. £150.
Bath, Royal United Hospital.—Sen. H.S. At rate of £175.
Bedford County Hospital.—Asst. H.S. At rate of £130.
Benenden, Kent, National Sanatorium.—Res. Asst. M.O. £300.
Birkenhead Infirmary and Institution, Tranmere.—Res. Asst. Med. Supt. £450.
Birmingham, Midland Hospital, Easy-row.—H.S. £150.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.
Bootle General Hospital, Nr. Liverpool.—H.P. At rate of £150.
Bradford, City.—Asst. School Dental Surg. £475.
Bradford, Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £200.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Brighton, Sussex Eye Hospital.—Hon. Clin. Asst.
Bristol General Hospital.—H.P. At rate of £80.
Bristol, Stoke Park Colony.—M.O. £600.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency O. Also H.P. Each at rate of £130.
Cancer Hospital, Fulham-road, S.W.—Physiological Chemist. £600.
Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.
City of London Hospital for Diseases of Heart, and Lungs, Victoria Park, E.—Registrar.
Coventry and Warwickshire Hospital.—Res. H.P. and Res. Cas. O. £160 and £125 respectively.
Dewsbury County Borough.—Deputy School M.O., &c. £600.
Doncaster, Royal Infirmary.—H.P. At rate of £175.
Downpatrick, Northern Ireland, Down Mental Hospital.—Asst. M.O. £300.
Dudley, Guest Hospital.—H.S. Also Asst. H. S. £200 and £170 respectively.
East Ham, County Borough of.—Asst. M.O. £500.
Elizabeth Garrett Anderson Hospital, Euston-road.—Clin. Assts.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
Great Yarmouth General Hospital.—H.S. £140.
Hove, Lady Chichester Hospital.—Jun. H.P. At rate of £50.
Huddersfield Royal Infirmary.—H.S. At rate of £150.
Hull Royal Infirmary.—H.P. to Sutton Branch. £160.
Ipswich, East Suffolk and Ipswich Hospital.—4 H.S.'s and 1 H.P. Each £120.
Leeds Hospital for Women.—H.S. At rate of £100.
Liverpool, Royal Children's Hospital.—Res. M.O. Also Second Res M.O. At rate of £180 and £120 respectively.
Leicester Royal Infirmary.—H.S.'s and H.P. Each £125.
Liverpool Heart Hospital.—Hon. Asst. Phys.
London University, S.W.—University Readership in Pathology. £800.
Lurgan Union, Northern Ireland.—M.O. £300.
Manchester, Ancoats Hospital.—Res. M.O., £150. H.P., H.S., and Orthopædic H.S. All at rate of £100. Also Asst. Pathologist (Part-time) £200.
Manchester, Hulme Dispensary.—Res. M.O. £300.
Manchester, Northern Hospital for Women and Children.—Sen. H.S. and Jun. H.S. £130 and £100 respectively.
Manchester Royal Infirmary.—Asst. Res. M.O. and Res. Clin. Pathologist. £100.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.
Margate Royal Sea Bathing Hospital for Surgical Tuberculosis.—H.S. At rate of £200.
Marseilles, Queen Alexandra Memorial Hospital.—Res. M.O. £250.
Mount Vernon Hospital, Northwood.—H.S. At rate of £150.
Nottingham General Hospital.—Cas. O. At rate of £200.
Nottingham and Midland Eye Infirmary.—Res. H.S. £200.
Plymouth Mental Hospital, Blackadon.—Deputy Med. Supt. £500.
Preston, Sharoe Green, Hospital, Fulwood.—Jun. Res. M.O. £156.
Preston and County of Lancaster, Royal Infirmary.—Surg. O. £300.
Princess Louise Kensington Hospital for Children, North Kensington, W.—Clin. Asst.
Queen Mary's Hospital for the East End, E.—Hon. Ophth. Surg.
Rainhill, Lancs County Mental Hospital.—Locum Tenens. 7 gns. weekly.
Reading, Royal Berkshire Hospital.—Res. Anæsthetist. At rate of £150.
Rotherham Hospital.—Sen. H.S. £200. Cas. H.S. £150. Also H.P. £180.
St. Giles Hospital, Brunswick-square, S.E.—Asst. M.O. £350.
St. Leonards-on-Sea, Buchanan Hospital.—Jun. H.S. £125.
Salford, Hope Hospital.—Res. M.O. £400.
Sheffield Royal Hospital.—Ophth. H.S. Also Anæsthetist. £120 and £80 respectively.
Sheffield Royal Infirmary.—Asst. Aural and Ophth. H.S. and H.S. and Second Asst. Cas. O. Each at rate of £80.
Southampton, Borough Isolation Hospital.—Res. M.O. £350.
Swansea General and Eye Hospital.—H.P. £150.
Walsall General Hospital.—H.P. and H.S. (Women). Each at rate of £150.
Walsall Manor Hospital.—Asst. M.O. £150.
West Bromwich and District General Hospital.—H.S., H.P. and Cas. H.S. Each at rate of £200.
Westminster Hospital, Broad Sanctuary, S.W.—Wander Scholar and Reg. to Children's Dept. £250.
Woolwich and District War Memorial Hospital, Shooters Hill S.E.—H.S. At rate of £100.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.
Wolverhampton Royal Hospital.—H.S. for Women's Hosp. £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Littleport (Cambridge) and at Worthing (Sussex).

Births, Marriages, and Deaths

BIRTHS.

BATEMAN.—On July 23rd, at "Redlynch," Cooden, Bexhill, the wife of Dr. C. E. Gooderson Bateman, of a son.

MOLESWORTH.—On July 20th, the wife of H. W. L. Molesworth, F.R.C.S., of a daughter.

TROUP.—On July 23rd, at The Farm House, Stonebridge, N.W.10, to Jean, the wife of Arthur G. Troup, M.D., D.P.H., —a son.

DEATHS.

HILLIER.—On July 25th, after a short illness, Thomas Ernest Hillier, M.A., M.B. Camb., aged 71 years.

SMITH.—At a nursing home in Sheffield, Charles William Smith, M.B., F.R.C.S., aged 53.

WATSON.—On July 27th, at Rainhill, Liverpool, George Alfred Watson, M.B., C.M. Edin., late Pathologist, Lancs Mental Hospitals Board.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

[1] The Diet Book, for Doctor, Patient, and Housewife. By Marguerite Requa Rea. London: Oxford University Press, Humphrey Milford. 1931. Pp. 197. 7s. 6d.

[2] See THE LANCET, 1916, i., 236 and 863; also McDonagh, J. E. H., Venereal Diseases, London, 1920, p. 158.